ENGINEERING NEWS-RECORD

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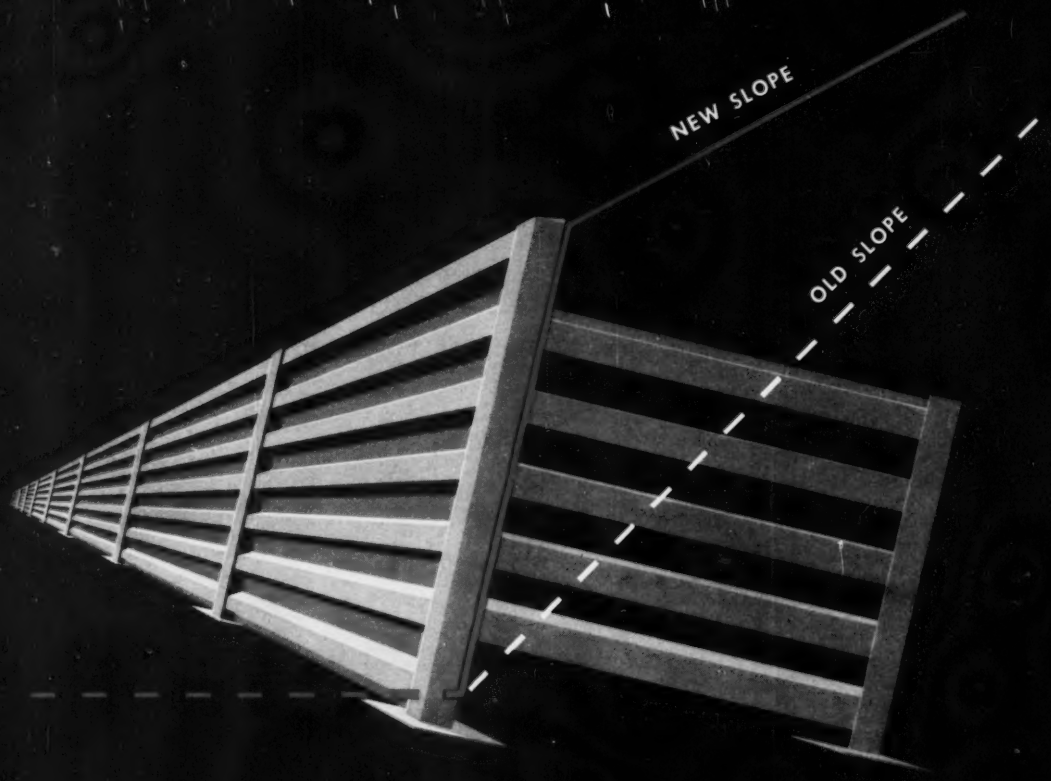

A new slant on the "angle of repose"

When unstable slopes seek their "angle of repose" they often cause a lot of trouble. Engineers used to solve such problems with heavy massive retaining walls. Then Armco engineers had a new slant. They said: "Why not make earth itself do most of the work?" The result—Armco Bin-Type Retaining Wall.

The advantages of this flexible metal wall are obvious. Less material need be transported to the job site. Handling is easier and less excavation is required. Individual units are nestable for shipment and storage.

Unskilled men do the work quickly using only hand tools. Armco Walls are adaptable to curves and changes in elevation; can be extended or completely salvaged. Thousands of installations prove them ideal for unstable slopes, limited right-of-ways, stream erosion and similar uses.

Making products simpler and more efficient has been a prime goal at Armco for more than 40 years. So has the designing of products to meet specific needs. Today you can bring your drainage and construction problems to Armco with full assurance that you will receive all the benefits of long experience, extensive research and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient, authoritative data to help you. If your problem is difficult or unusual, why not talk it over with us.

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

MIDDLETOWN, OHIO • OFFICES AND PLANTS IN PRINCIPAL CITIES
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Structural Plate Pipe and Arches ★ Corrugated Metal Pipe ★ Welded Steel Pipe
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B.F.Goodrich

Working on the levee with 33-ton loads —this job calls for Super Traction!

WORKING on a levee enlargement job, the bottom-dump Euclid shown above is being loaded with over fifteen cubic yards of fill dirt from a borrow pit. Add an equipment weight of 35,700 pounds and this king-sized load represents a real traction job. When you consider that the thirty-three tons must be worked over soft, sandy loam—you have a job for super traction!

That's where the B.F.Goodrich Super Traction tire takes over. Notice the wide, deep footprint left by these tires—especially designed for jobs where real pulling power is needed in sand, loam, mud and soft dirt. The deep cleats take a big bite, yet this tire is built *wide* to "float" as it rolls. Designed for drive wheels, it serves equally well on free-rolling wheels in *reversed* position. That's the success story of the BFG Super Traction.

In addition to a longer-wearing tread compound, all B.F.Goodrich off-the-road tires offer you the exclusive protection of a *nylon shock shield* (double in the larger sizes). Layers of nylon cord are built into the tire between the tread and the rayon cord body. This shields the backbone of the tire against shocks and costly bruise breaks.

Such patented protection as the nylon shock shield is yours at no extra cost when the B.F.Goodrich brand is on your off-the-road equipment. There's a specially-designed, deep tread for every job.

See your B.F.Goodrich Dealer. Specify BFG tires for your new equipment. Enjoy the longer service and lower operating overhead offered you by *The B.F.Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

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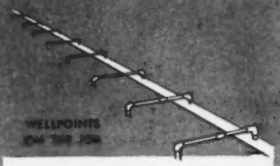

Pre-drainage with Complete Wellpoint Systems prevents trouble wherever subgrade water is a problem. By eliminating the water hazard, you usually eliminate any need for sheeting — you often are able to continue operations even in sub-zero weather — you frequently can use equipment which "wet grounds" would rule out—and you always can count on completion in scheduled time at scheduled costs!

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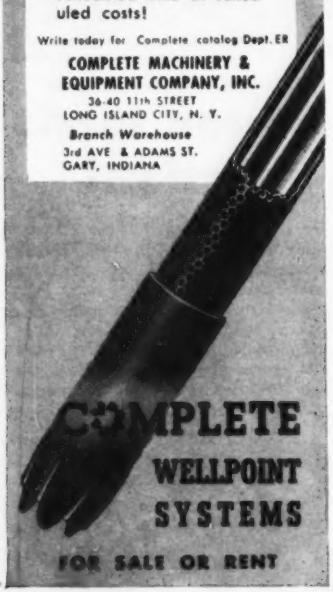

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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 146 FEBRUARY 1, 1951 No. 5

WALDO G. BOWMAN
Editor

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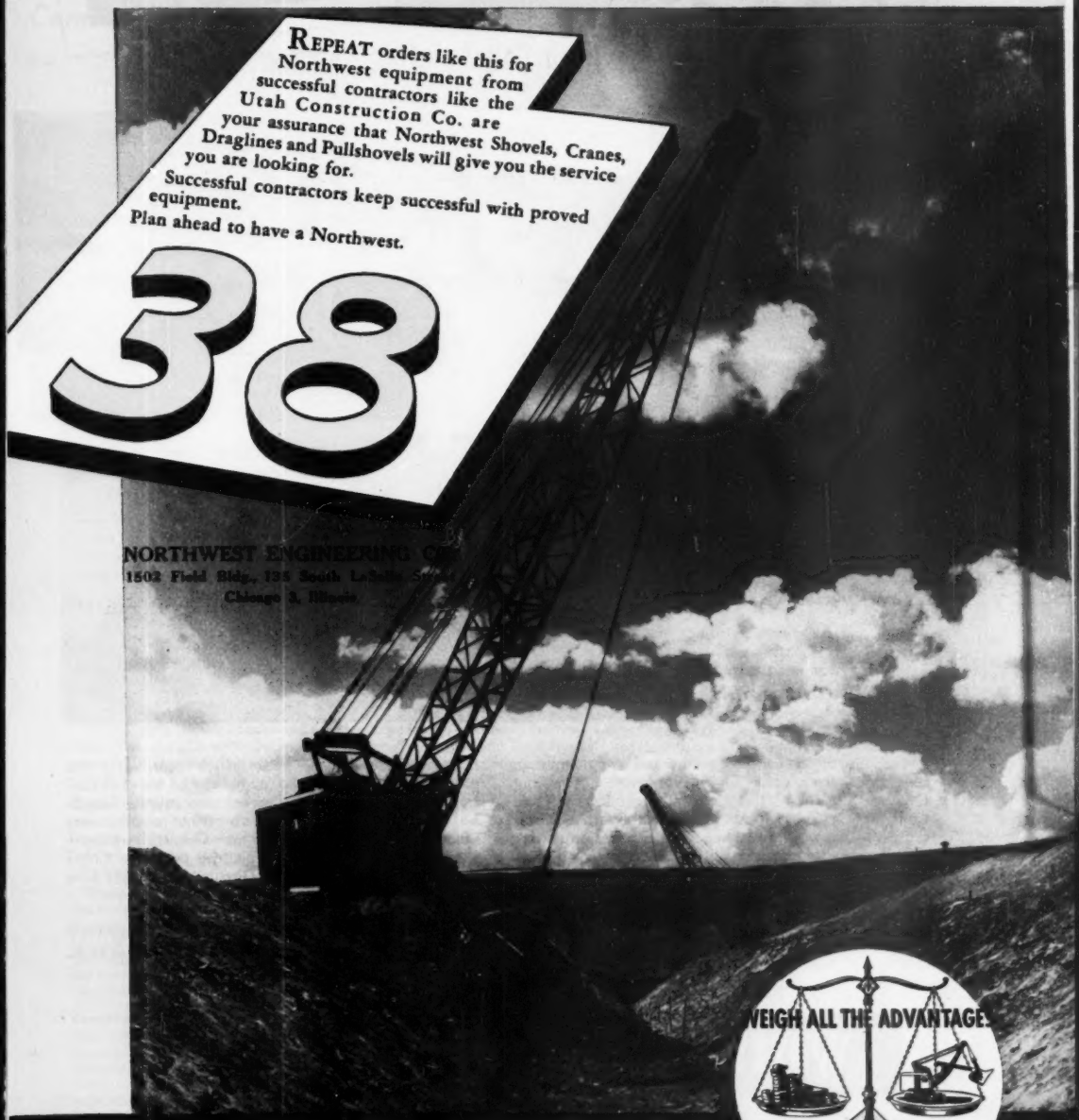
UTAH *Construction Co.*
buys its thirty-eighth NORTHWEST


REPEAT orders like this for Northwest equipment from successful contractors like the Utah Construction Co. are your assurance that Northwest Shovels, Cranes, Draglines and Pullshovels will give you the service you are looking for.
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18 COBRAS

perform for Utah Construction Company

WOOLDRIDGE

Two big Oregon contracts find 18 Wooldridge Cobras at work for Utah Construction Company.

There's no greater challenge to men and equipment than the rugged terrain of the Pacific Northwest. On two big Oregon rail and highway relocation contracts, Utah Construction Company met this challenge with 18 Wooldridge Cobras working 16 hours per day. Ten units were used to move tough rocky soil and sticky clay over mile-long hauls on the Lookout Point Dam project. The other eight Cobras are removing 650,000 cu. yds. of gravel from a mid-stream island of the Columbia River for the McNary Dam project. On a typical 7,000-foot cycle, these eight Cobras moved 738 PAY YARDS per hour. Again and again performance records like this prove that Cobras have the ruggedness to *maintain* constant high-speed operation month after month. Simplified maintenance minimizes down-time to measure every hour in pay yards. Watch the new Cobras in action—study performance records—get the complete Cobra story from your Wooldridge Distributor, and see how you can up your profits, too.

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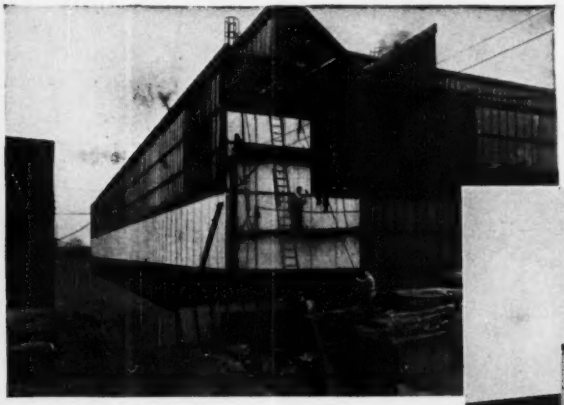
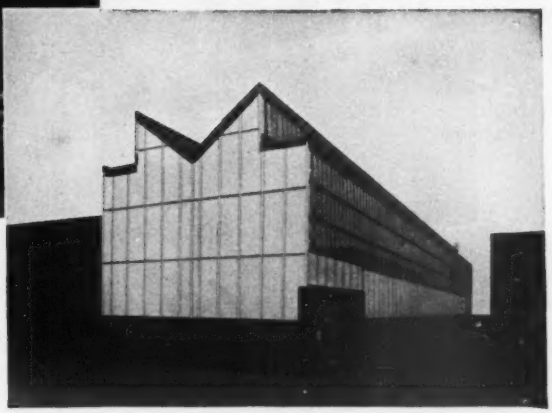
WOOLDRIDGE

PROVED AND APPROVED FOR EVERY TYPE OF EARTH-MOVING JOB

Cemesto* curtain walls need no exterior or interior painting

Cemesto combines amazing structural strength, high insulation value, exterior and interior finish—all in a single handy panel that's quick and easy to apply!





Babcock Press of Canton, Ohio, replaces metal siding with durable Cemesto Panels

Contractor: A. G. Stafford Co., Canton, Ohio

Above: View of workmen replacing printing plant's worn-out corrugated steel siding with Cemesto Insulating Structural Panels.

Right: Same building—now with permanent, weathertight, maintenance-free walls of Cemesto Panels.

Now, build *insulated* curtain walls for only slightly more than the cost of ordinary *uninsulated* construction! Cemesto Insulating Structural Panels quickly, thriftily build *permanent* curtain walls that require no exterior or interior finish . . . *can't* corrode . . . *never* need maintenance!

Widely used for ROOF DECKS and PARTITION WALLS, as well as CURTAIN WALLS—Cemesto Panels offer many advantages and economies. They not only speed up work and cut costs in construction of all kinds—but they also *insulate as they build!*

Cemesto Panels Offer Many Unique Advantages. Cemesto Panels consist of a core of Celotex cane fibre insulation, to which a *non-combustible* cement-asbestos facing is bonded on both sides by a vapor-resistant, moistureproof adhesive.

These rigid, pre-formed units are light and easy to handle, yet have remarkable structural strength. Their smooth, hard, stone-gray surfaces have a light reflection value of 58% . . . provide attractive exterior and interior finish . . . no costly painting required! And their insulating core is protected by the exclusive (patented) Ferox® Process against fungus, dry rot, vermin and termites!

Cemesto Panels Insulate As They Build. Because of their high *built-in* insulation value, Cemesto Panels make any building cooler, more economical to air-condition in summer . . . warmer and thriftier to heat in winter. They make possible more comfortable, healthier working conditions. And this pays off in improved employee efficiency . . . reduced accidents . . . increased production!

Cemesto Panels are Amazingly Versatile. Cemesto Panels resist fire, weather and wear. Can be worked with ordinary tools on the job, or pre-cut at the mill for faster application. Quickly, easily attached to steel framing with metal clips, or to wood framing or wood members with nails. And they are easily demountable, *fully salvageable.*

Cemesto Insulating Structural Panels make possible important economies in the design, construction and maintenance of every type building . . . from giant industrial plants to modest homes. Almost 20 years of varied use in all climates, all over the world, have proved their stability, permanence and performance. Discover how they can help *you* build better, faster . . . *and at lower cost.* Mail coupon below for complete information!

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TEXACO

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tection against wear and corrosion.

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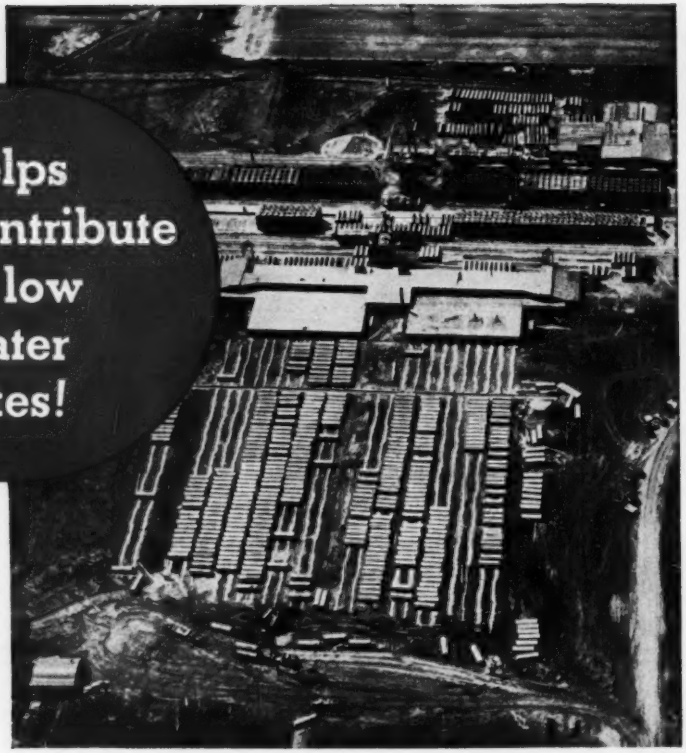
2. *Texaco Marfak Heavy Duty* — Offers full protection and economy in wheel bearings, requires no seasonal change . . . reduces maintenance costs.
3. *Texaco Track Roll Lubricant* — Assures longer service life for crawler track mechanisms . . . reduces wear.

A Texaco Lubrication Engineer will gladly show you the way to greater savings through Texaco's Simplified Lubrication Plan. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

LOCK JOINT PIPE helps contribute to low water rates!



A temporary Lock Joint pipe plant at the site. Use of local labor and materials returns to the community a large part of the pipeline cost.

Although a modern water supply system represents a sizeable investment, sound engineering makes it possible to keep water rates at a minimum.

Knowing this, economy-minded water supply engineers specify Lock Joint Reinforced Concrete Pressure Pipe for mains of 16" or larger. Lock Joint's low initial cost, its long life, its exceptionally high carrying capacity and its negligible maintenance cost assure the utmost service for the consumer's dollar.

Water works officials who have installed Lock Joint pipe lines point to these lines as the most economical in their entire systems.

We shall be glad to discuss your requirements. Simply write or call our nearest office.

Lock Joint's easy installation means low laying cost.

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SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT Reinforced Concrete PRESSURE PIPE

NEWS BRIEFS

Man bites dog—Auto drivers knocking over traffic lights is a common event, but when a traffic light goes haywire, knocks down a policeman and rams two passing buses—well that's news! It happened in Worcester, Mass. Leaking illuminating gas seeped up through the hollow post and into the light chamber. An electric spark did the rest. A patrolman, 30 ft away, was knocked down by a metal reflector, windows were broken in one bus and a hole was blown through the rear of another. Parts of the light fixture were hurled 75 ft.

Clean water wanted—Eau Claire means "clear water," but in the opinion of the Wisconsin water pollution committee that is to some extent a misnomer at present. In any event, it has started action against the city for failure to comply with orders to improve its sewage disposal facilities. Eau Claire furnished a preliminary report that it would cost $400,000 to build a new treatment plant, but, according to the committee, the city has taken no further steps in the matter.

Some reduction — Jefferson County, Ky., got a bill for $267,000 from Architect Stratton O. Hammon for planning a new courthouse that was never built. County Attorney Lawrence G. Duncan, interpreting Fiscal Court records on the 1947 transaction, said the court cancelled its architectural contract when it paid Hammon $3,000 of a $5,000 maximum provided for preliminary drawings. The Fiscal Court on Jan. 3 said it may pay the architect an additional $2,000, but not the $267,000 he claims for services in 1947.

"Curfew must not ring tonight."—The curfew bell at Columbiana, Ohio, which for 20 years has rung at 10 o'clock every evening to warn young stragglers off the streets is now silent. The local council voted to rescind the curfew law when it was found that the continual ringing of the huge bell atop the village hall had weakened the timbers supporting it.

Tough on engineers—A bombshell was dropped on the engineering staff of the New Brunswick provincial public works department recently when J. B. McNair, provincial premier, announced the discharge of 32 engineers. The reason given was that the international situation makes it necessary to cut the road building program.

(*Continued on page 10*)

WITH A

SAUERMAN SCRAPER

DRAGLINE AND SCRAPER

This picture shows a Crescent scraper rigged with a crawler dragline to convert the dragline into a slackline machine that reaches several hundred feet and moves gravel from river onto bank.

SCRAPER STOCKPILING

A concrete construction project required storage of a large tonnage of aggregate on ground between railroad and mixing plant. Two Sauerman scraper machines, one of which appears in picture, stored and reclaimed 2,000 tons of material a day.

MOBILE SCRAPER UNIT

The Sauerman Tower Machine, illustrated above, uses a Crescent scraper attached to a trolley carrier which travels on a cable supported by two self-propelled towers. It can make a deep cut 1,000 ft. or more in width and move along as it digs.

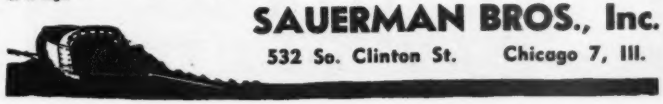
In a Sauerman Power Drag Scraper you find a profitable combination of digging power, haulage speed, long reach, simple operation and economical maintenance. It cuts costs to the bone on almost any job of digging and hauling earth or bulk materials distances from 100 ft. to 1,000 ft. or more.

A Sauerman machine is particularly useful where ground conditions are difficult. It gives good results on such diverse work as the excavation of hard-packed gravel, movement of sticky clay, handling of waste material, bulk material stockpiling, removal of sludge from settling ponds and so forth. In digging from a high hill it overcomes the hazards of caving walls.

An important exclusive feature of the Sauerman scraper machine is the Crescent bottomless scraper. Because of its streamline design, the "Crescent" requires less line-pull than any other type of scraper, both in excavating and in conveying. It penetrates hard material with the ease of a plow-share, gathers a full load in a few seconds, then rides its load speedily to the dumping point where it makes an instantaneous, clean dump.

The operator of a Sauerman machine has finger-tip control of the entire operation. Automatic shifting of the tail end of the machine is provided where desired. Any workman is readily trained as an operator. Power requirement is moderate. Installation and upkeep costs are surprisingly low.

When you have a troublesome problem involving the movement of any kind of earth or bulk material, send a description of your project to the Sauerman Engineering Dept. Their advice, based on over 40 years of experience, is yours for the asking. Write for new 24-page Scraper Catalog.



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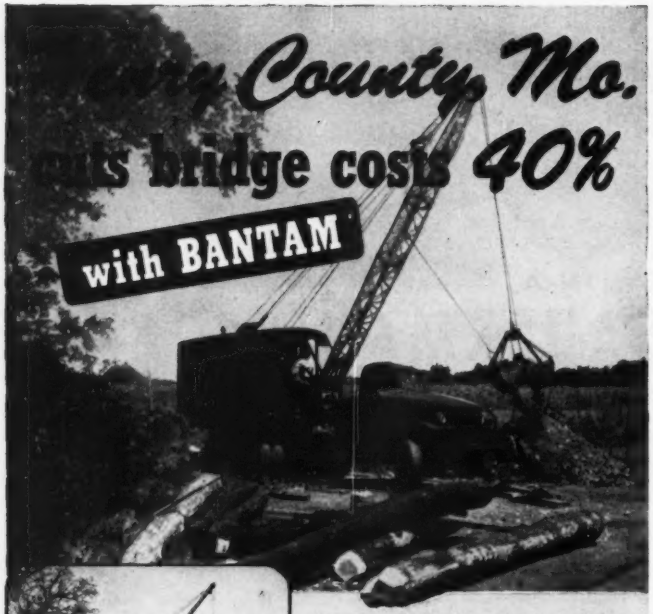
532 So. Clinton St. Chicago 7, Ill.



Builds 85 bridges in 1 year with mobile clam-pile driver

Hal Parker, County Engineer, Clinton, Mo., saw an opportunity early last year to cut costs by mechanizing Henry County's Bridge Dept. with a low-cost Bantam clamshell on rubber tires. Parker used fast-working Bantam clam to dig foundations . . . switched to 1200 lb. hammer for driving piling . . . employed rugged 30' boom for pouring concrete buckets weighing 750 lbs. per load. This new Bantam method enabled Parker to service 750 sq. mi. of roadways . . . complete 85 small bridges in 12 months at record low cost.

Keeps going 2400 hours —without repairs!

Despite gruelling work schedule of 8 hrs. a day, 6 days a week, only Bantam maintenance has been for cable replacement, according to Engineer Parker. You, too, can cut costs with Bantams. Act now!

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Send details on truck-mounted Bantam

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*Less truck, F.O.B. Waverly, Iowa. Prices subject to change without notice.

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Costs less . . . goes anywhere fast

GETS MORE JOBS DONE

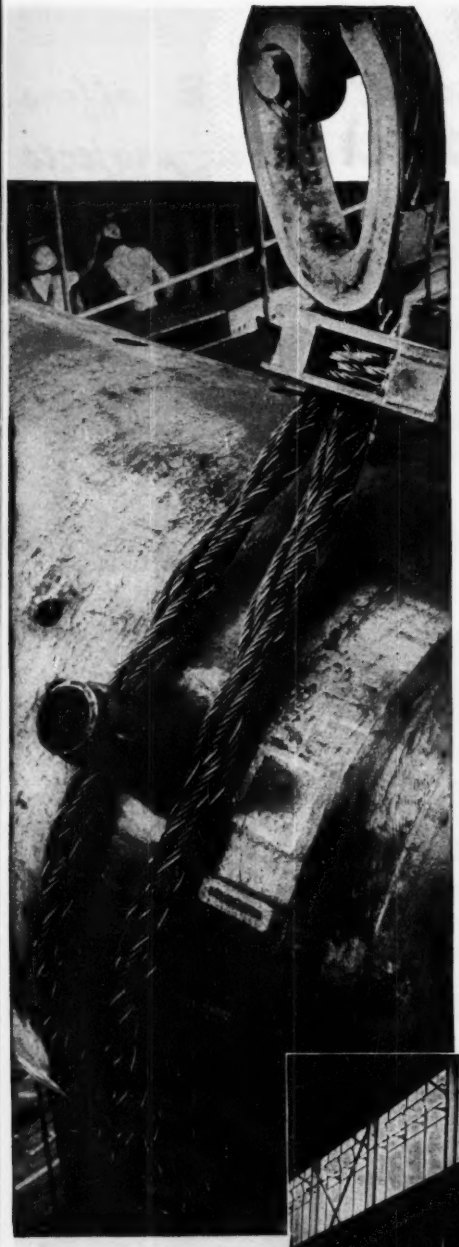
Strange aggregate—It took a cement mixer to make the "world's biggest salad" when the Phoenix, Ariz., Kiwanis Club, sponsors of the Salad Bowl charity football game, shoveled a ton of ingredients into a new, sterilized concrete mixer as part of a publicity stunt. The giant salad then was served to more than 1,000 persons.

Substitute for Scone Stone—William G. Riley, president of the Indiana Limestone Co., Inc., Bedford, Ind., recently sent a cablegram to King George VI, offering to send Westminster Abbey a block of Indiana limestone to take the place of the recently stolen Stone of Scone on which British monarchs have been crowned from time immemorial. This offer is not without precedent as Bedford, Ind., in 1948 presented Bedford, England, with a "Cornerstone of Freedom." To date, King George has not accepted Mr. Riley's proffer.

Sawed-off bridge—A truck driver hauling a big fuel tank gracefully wedged his vehicle into a narrow truss span bridge over the North Meherrin River on Route 40 in Lunenburg County, Va. With traffic blocked behind him, he took a hacksaw and sawed off the girder that trapped him at one end of the bridge and forced his way through. The trucking company offered to pay the damages when the highway department complained of the driver's direct action.

Good roads boosters — New York County (Manhattan Borough) is the 57th county in the state to establish a chapter of the N. Y. Good Roads Association. Membership in this association is open to all citizens of the state who are at least 18 years of age, who subscribe to the principle that good roads are needed, and who also subscribe annual dues of one dollar.

Bitter waters—Columbus, Ohio, which prides itself on its superb water system, recently asked the state for help in removing the bitter taste from its most praised product—pure tap water. The source of the bitterness was said to be a creosote discharged into the Little Scioto River at Marion, Ohio. According to Paul Laux, water superintendent, phenol in the creosote reacts with a chemical used in purification and produces the bitter taste. The city has ordered chlorine dioxide feeding equipment, costing approximately $2,500, to prevent the reaction with phenol, and has asked Chief Sanitary Engineer F. Holman Waring of the Ohio Health Department to take action to have the nuisance eliminated.



Here's the grip for the trip

Do your lifts consist of occasional difficult loads . . . or do you require a steady series of pickups engaging a minimum crew? In either case, flexible Yellow Strand *Braided* Safety Slings* will provide the right grip for the trip. And you'll be set to cut handling time, and to lower costs, as compared with the use of bulkier slings.

Patented *braiding* increases the pliability of stout Yellow Strand Wire Rope. A choker or basket hitch conforms readily to odd shapes, provides more security for unbalanced or slippery loads. Direct connections—via hook, thimble, shackle, socket or special fitting—are easily attached, owing to the relatively light weight and high kink-resistance of Yellow Strand *Braided* Slings. Send details of your application now for a recommendation by B & B engineers.

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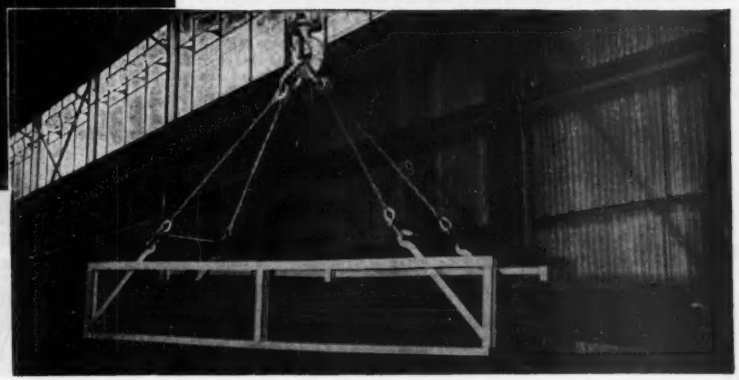
BRODERICK & BASCOM

Yellow Strand

BRAIDED SAFETY SLINGS

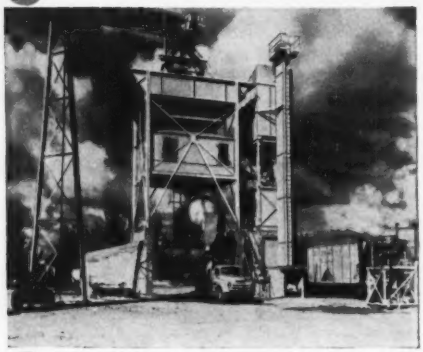


*PATENTS: U.S., 1479889, 1524971, 2142641, 2142642, 2299888; CANADIAN, 255074, 256068

SEE *what* ERIE *offers for* CONCRETE *projects*

THE Erie Portable Concrete Plant at the left has produded 3275 cu. yds. of air entrained concrete for tunnel and spillway at the Burr Oak Dam sight. This plant features 20 cu. yd., 3 compartment bin loaded by integral 60 T. P. H. bucket elevator with materials batched thru hydraulically controlled 3 beam AggreMeter with 4th beam for water weighing. One man operates all controls, a helper feeds bag cement. Takes about an hour to set up this plant and less to knock down for moving to next job.

Erie Portable Concrete Plant made 3275 cu. yds. of concrete at Burr Oak Dam in Ohio.



Erie 3 yard Wet and Dry batch Concrete Plant includes Type CTB 160 cu. yds. 3-compartment AggreMeter Plant connected to Erie M-3 492 bbl. single compartment Cement Bin loaded by undertrack hopper to vertical 50 T. P. H. bucket elevator. Produces up to 500 yards of concrete per day.

Erie G. T. B. 79 yard 3-compartment bin with 3 yd. Erie AggreMeter. Equipped with adjustable columns to raise or lower bin for charging batch trucks or truck mixers. Write for bulletin on the complete line of GTB Bins.

Erie CSB 592 bbl. Silo Type Cement Bin, 11 ft. diameter. Available in 11 & 12 ft. diameters in many capacities for elevated or ground storage of bulk cement.

Write for Booklet 2L-2 for complete data on the line of Erie 2-line Contractor Buckets.

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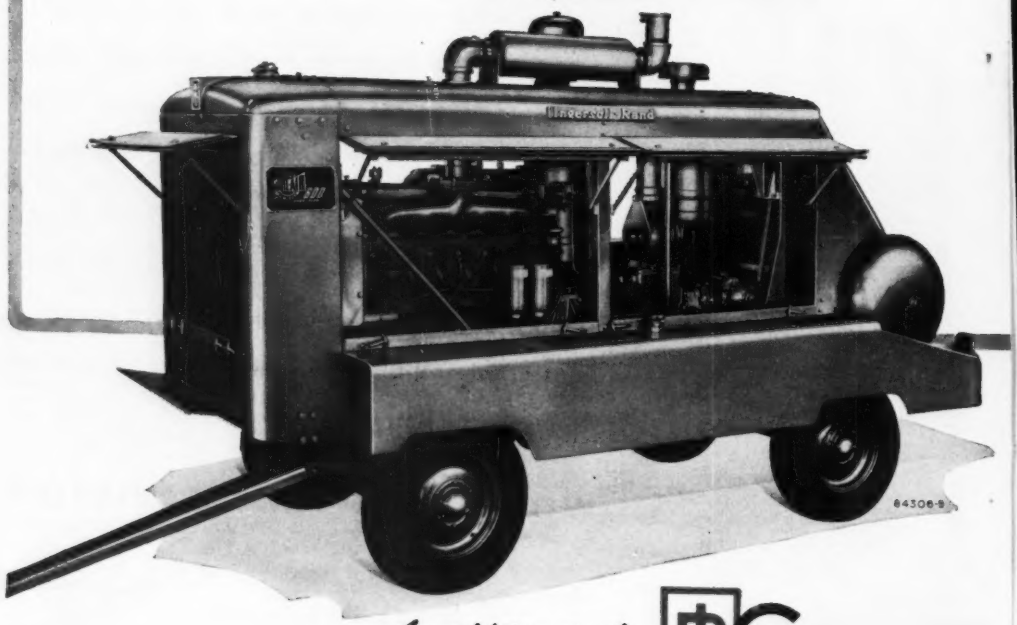

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The portable compressor builder that many times before has set new standards

- First Two-Stage Air-Cooled Portable Compressor
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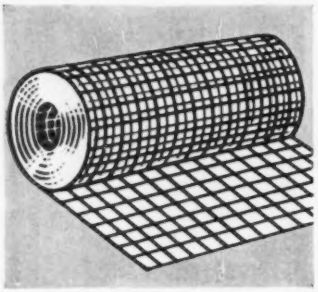
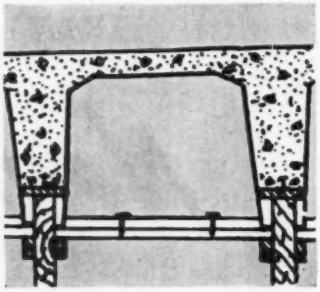
544-2

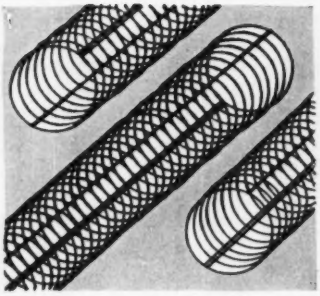
Write or call your nearest Ingersoll-Rand representative for the full story.



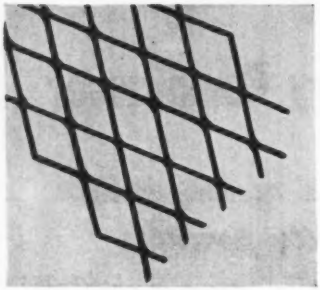
WIRE FABRIC



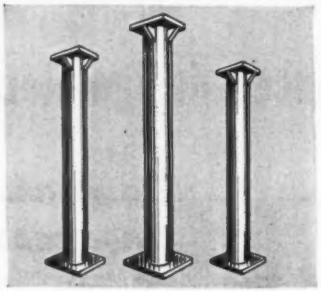
STEEL FORMS for concrete joists



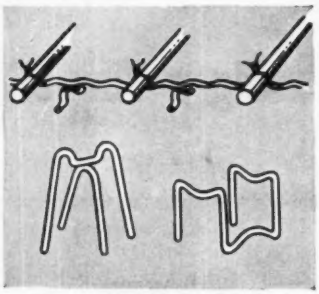
REINFORCING SPIRALS



EXPANDED METAL



LALLY COLUMNS



REINFORCING ACCESSORIES

Construction Steels for Prompt Shipment from Stock

Did you know that your nearby Ryerson plant is a time-saving source for the products pictured above? And that, right now, Ryerson stocks of all these products are "fairly good to excellent"? Most are on hand in several types and a wide range of sizes.

Ryerson construction steel experts are ready for your call at each of thirteen strategically located plants. You can count on them to give your requirements special attention and prompt, accurate handling.

Your nearby Ryerson plant is also a convenient source for many other construction steels, but, of course, today some shortages are inevitable. However, call us for any steel requirement and we'll do our level best to help you.

Re-Bars from Ryerson
Meet or Exceed New ASTM Spec. A305-49

With reinforcing bars from Ryerson, designers can take full advantage of the higher compressive strengths of modern concretes and the higher tensiles of today's steel.

All Ryerson bars are rolled to meet the new ASTM specification for deformation height and spacing. All are stocked in accord with the new numbering system for bar sizes.

Great demand has severely reduced our bar stocks but we will work with you if we possibly can.

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JOSEPH T. RYERSON & SON, INC.—STEEL SERVICE PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND
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THE CONSTRUCTION WEEK

LEGISLATORS ARE SKEPTICAL—Congress doesn't believe President Truman's $16 billion in new taxes are necessary. Total fiscal 1952 spending is planned at $71.5 billion—including the fair deal and foreign aid. There is a good chance that pay-as-you-go defense in 1952 may amount to less than $10 billion.

MORE BASIC CAPACITY—Facilities to produce 60% more aluminum by late 1952 is the goal of defense planners. Target for steel has not been set. But requests for rapid industry amortization show industry plans to add some 20 million tons. (ENR, Jan. 4, p. 23)

PAINTERS CHARGE VIOLATIONS—AFL painters in Los Angeles blame poor inspection on the part of FHA for what they term "flagrant violations" of FHA and VA painting specifications on tract homes. Instances are cited where two coats were applied on GI homes advertised to have three coats. Some construction jobs that were finished only 18 months ago are said to be peeling badly.

FRESH WATER FROM THE SEA—Congress has three bills to provide $25 million for research on a practical means for production of fresh water from the sea or from the atmosphere. Interior would be given authority to build plants and could sell the water thus derived.

TANKER SHORTAGE COMING UP—Washington is beginning to worry about sufficient oil tanker capacity for the military. A voluntary allocation program is being considered. This country sold 216 of the best war-built tankers to foreign merchant marines.

PRIVATE ENTERPRISE WINS—Private electric utilities last weekend claimed a victory over federal power planning. Federal Power Commission approved (Jan. 26) licensing Virginia Electric & Power Co. to construct a $27 million, 91,000-kw hydro-electric installation at Roanoke Rapids (ENR Oct. 12, 1950, p. 128). Department of Interior had opposed the application bitterly for two years. Interior has 30 days in which to request a rehearing. Next question: Will FPC now rule for private development of sites on the Kings River in California by Pacific Gas Electric Co., another long-standing controversy?

CASH ON THE BARREL HEAD—The 30-day freeze on commercial building created a few cases of customer panic. A West Coast contractor reported the cash sale of one house—for $70,000; the first such since the war.

STEEL INVENTORY LIMITS SET—NPA set new inventory limits for users of steel. These were 45 days' supply for any type of steel and gray and malleable iron castings and 30 days' for consumers of pig iron. The 45-day limit was not applied to orders for structural steel to be cut to specifications for specific construction projects.

GLOOM OVER COPPER—Defense Minerals Administrator James Boyd stated that defense requirements of copper exceed the known deposits of that metal in parts of the world open to the U. S.

TOURISTS LIKE DAMS—Despite growing security restrictions against visitors at federal power projects, 22,566 persons visited Hoover Dam during December—a new record for the month. Year's total at Hoover was 393,685—third highest in its history.

'INCOR' 24-HOUR CEMENT SPEEDS GAY WHITE WAY PAVING, TIMES SQUARE TO COLUMBUS CIRCLE

● Latest Broadway hit is the well-groomed stretch of new Main Stem paving throughout the length of the Gay White Way, from Times Square to Columbus Circle. Taking a bow for stellar performance in this new version of "Street Scene" is 'INCOR' 24-HOUR CEMENT.

Car-track removal and repaving were completed in record time, amidst the bustle and confusion of this most heavily congested area.

On a block-to-block, half-width basis, the old pavement was torn out, utilities and subgrade readied, and 'Incor' concrete placed. Dependable 24-hour service strength made it possible to run trucks over newly-placed sections, speeding work all along the line. At intersections, 'Incor'* concrete, service strong in a few hours, was ready to carry heaviest traffic.

No stranger to Gotham, America's FIRST high early strength Portland cement speeds traffic over many miles of New York City streets and bridges . . . time saved at the outset . . . maintenance dollars saved through the years.

*Reg. U. S. Pat.Off.

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Contractors:
FRANK MASCALI & SONS, INC., Flushing, L. I.
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'Incor' Ready-Mix Concrete:
COLONIAL SAND & STONE CO., INC., New York

Placing 'Incor' concrete at 43rd Street—in the clutches, 'Incor' was ready for traffic in a matter of hours.

Crosstown traffic moving over newly-placed 'Incor' concrete at 46th Street intersection.

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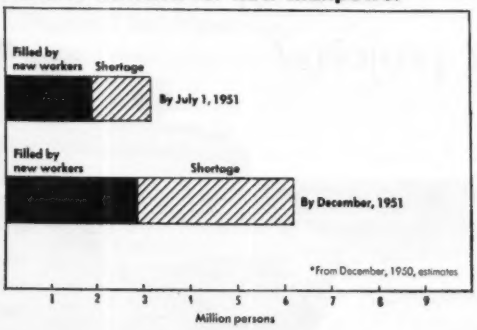
"INCOR"

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

CONSTRUCTION TRENDS

Defense demand for new manpower*



MOBILIZATION BREEDS A MANPOWER SHORTAGE

A labor shortage looms as a major U. S. problem in 1951. The national emergency will strain the supply of labor—especially skilled workers—close to the limit.

By next June, defense factories and the armed forces will need over three million more men than they did last December. Experts say the country cannot count on recruiting that many new workers—short of all-out war. The shortage will have to be filled with workers from civilian industry.

After June, the military program will get even larger, take more men from non-defense industry. It all adds up to a continuing labor shortage, growing more serious through the year.

SPOT SHORTAGES NOW—Actually, the shortage is already with us—in its early stages.

Booming business is giving jobs to a record number of workers. Non-farm employment hit an all-time high in October, with almost 45.9 million people on the job. Unemployment is close to its postwar low.

Shortages are appearing in an increasing number of areas. Out of 150 industrial areas, only 20 reported a tight labor supply in July. In September the number jumped to 51. By November it was 56.

Important skilled occupations are among the first to feel the shortage. Engineers, machinists, tool designers and makers, mechanics and draftsmen are in special demand.

So far, manpower shortages are important, but not serious. They aren't slowing production in many industries.

REAL MANPOWER PINCH THIS YEAR—In 1950, the heavy demand for manpower came from booming civilian industry. The draft took only a few hundred thousand men by year's end, and military production increased slowly just after Korea.

1951 will be different. By July 1, defense plants will need an estimated two million more workers than they had last December. Draft calls will add a million or more to the new demand for men.

Demand will get even heavier after July. Total defense needs are expected to grow by another three million between July and December, 1951. And those are minimum figures. They will increase—fast—if the international outlook takes another turn for the worst.

Normal growth in the labor force can't meet the new manpower needs.

Only about 500,000 new workers would normally start looking for jobs between December and July. That number won't even meet draft requirements.

Other sources of manpower—retired workers, housewives, the unemployed—can be tapped. But, short of all-out war, those sources are expected to add only about 1.4 million to the manpower supply. That will leave a shortage of about a million workers by July 1.

A million worker shortage is not too serious in numbers. It can largely be filled with workers released by civilian industries cut back by material shortages.

SCARCEST: SKILLED WORKERS—But the manpower shortage hits hard in the skilled trades.

Military goods require more skilled work than most of the civilian products they replace. As a result, skilled labor gets scarce sooner than common labor and the shortage is more acute.

Activating the military reserves makes the shortage worse. Reserve calls have already helped cause shortages in some skills, and rapid expansion of the Armed Services will take even more skilled reservists out of industry.

At the same time, the military draft makes it harder to find good young replacements for skilled men called by the military. Businessmen are already worrying about a long-range shortage of young engineers.

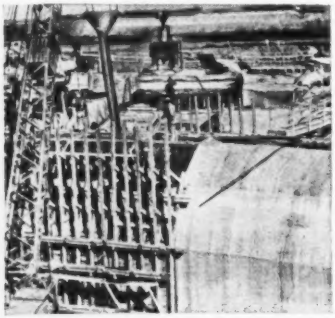
Shortages of skilled labor hit construction with unusual force. Half of all construction labor—a million and a quarter men—has special skills.

Skilled men are getting scarce when the construction industry needs them most. During a period of mobilization the industry has to be highly flexible to shift from building stores and houses to the construction of defense plants. Without good supervisors, engineers and foremen, the changeover to defense work would be next to impossible.

But the manpower picture is not all dark. Contractors can still protect themselves against extreme shortages—by hanging on to key people and filling important spots with older, draft-exempt men. With proper precautions the manpower problem can be kept under control in construction unless—or until— the U. S. fights a major war.

What's U. S. Rubber doing on today's big projects?

U.S. BULL LINE AIR HOSE is practically standard for tunnel contractors. Also used for compressor work, acting as manifold line supplying compressed air to portable tools.



CONTRACTORS on the big dam construction job in the Middle West used several varieties of U.S. Rubber Hose, to carry air, water, oil and cement. Workmen find "U.S." hose flexible, rugged and easy to handle.

On almost every phase of construction, "U.S." products are at work. Hose of every type, in dozens of specifications, packings from the most complete line in industry, Hydron absorptive form linings, "U.S." flexible form strips, conveyor belts large and small, transmission and elevator belts, and the remarkable U.S. Rainbow V-Belts with the unique Equa-Tensil Cord Section ... these are some of the many "U.S." items contractors rely on to keep the job moving faster. For further information, write to address below.

PRODUCTS OF

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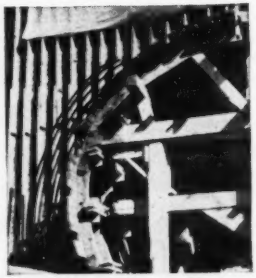


TUNNEL SECTION of a large dam in Texas. Hydron form linings, a "U.S." development, provide a smooth, pit-free surface, enabling the concrete to withstand the grinding action of high-velocity, silt-laden waters.

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Dispersal for Protection

BUILDING PUBLIC BOMB SHELTERS for everyone in big cities appears to be economically impractical. All essential workers can and should be provided for, but it is not feasible to spend public money on shelters for everyone else. How then can the general public be protected against air raids?

One alternative: The government might compel building owners to provide bomb shelters for their tenants and employees. (This was discussed in ENR Jan. 18, p 21; and civil defense officials privately support the idea.) Another alternative: Make industry disperse and evacuate non-defense personnel who cannot be accommodated in public bomb shelters.

But decentralization of even the more essential industries on a scale that would minimize the harmful effect of bomb attacks on large metropolitan communities also is impossible in a reasonable time. Such decentralization can be carried out only over a long period.

Time factors, however, should not be permitted to cloud the advantages of locating new plants and plant expansions outside metropolitan regions. Such dispersal would reduce the possibility of bomb damage to the new plants and would draw some people from urban areas.

Another point for civilian defense consideration is the impossibility of providing adequate bomb protection for bomb victims and other patients in existing urban hospitals. Hospital inadequacies cannot be overcome by new construction within the cities because, so far, no above-ground or underground design is deemed practical. Suburban or rural hospitals would have to be used, and unfortunately, we are most deficient in hospitals in suburban and rural areas.

It is urgent, therefore, that not only new essential industry be encouraged to build away from heavily populated districts, but also that many more outlying hospitals be rushed to completion.

Too Much Duplication

ONE OF THE UNFAVORABLE RESULTS of having many closely related engineering societies is the duplication of subjects considered by those societies at meetings.

An example is found in an announcement in the ASTM Bulletin that the society's annual meeting will include a symposium on surface and subsurface reconnaissance. Papers will be presented on geological reconnaissance in the Plains area, interpretation of geological maps and application of aerial photography to preliminary engineering soil surveys. Very similar papers were given at the annual meeting of the Highway Research Board. These papers centered around using aerial photographs to make soil surveys along existing highways or for new highways. Papers on the same or closely related subjects have been presented at Highway Research Board meetings for two or three years past. Consequently, it hardly seems possible that anything new on this subject can be brought out at the ASTM meeting.

Responsibility for this kind of duplication appears to originate in various sources. Sometimes it is the result of the enthusiasm of those who are using a new method—such as aerial identification of soils. At other times it appears to be the result of a desire to include discussion of a subject that appears to be growing in popularity, regardless of whether or not it is directly in the field of that society.

Whatever the cause, such needless duplication calls for more study on the part of an engineering society's top management whenever someone proposes to add a new subject to the society's activities. A quick check will reveal whether some other society already has taken up that subject and the extent to which it has been covered in papers before that organization. If the coverage appears to be adequate—and if the subject appears to be a more logical one for the other organization to handle—then the directors should turn the proposal down.

Unique Pier Design

RADICAL DEPARTURES from traditional design thinking and traditional material uses are found in the structure that is to replace the original Pier 57 on the Hudson River at New York (ENR Jan. 11, p. 43).

Since the early days the city's piers have been built largely of timber and supported on long timber piles driven into the deep mud that lies along most of the waterfront. In general, it was this soft deep mud that determined the type of structure to be used. The fact that marine borers never were active in the harbor waters, of course, was a contributing factor. And with timber fixed as the supporting material there was little point in not specifying it for deck and superstructure.

The pier now being built to replace one destroyed by fire in 1947 is to be of fireproof construction. The deep mud under the pier is to be consolidated by vertical sand drains, old piles are to be cut off at the mud line and then large, hollow concrete-box caissons are to be sunk to rest on the piles and stabilized bottom to form the pier substructure. The buoyancy of these caissons will materially reduce the load to be carried by the foundations.

It would be difficult to conceive of a design that would be as unlike the original as this one. And that in turn indicates that the city's Department of Marine and Aviation is not afraid to depart from tradition when such departure promises economies in operation and greater immunity from damage due to fire.

Better for structural work

The greater plasticity of Duraplastic concrete mixes aids proper placement and results in improved surface appearance. An air-entraining portland cement, Duraplastic requires less water for a given slump. It has proved advantageous for all types of structural concrete.

Makes more durable concrete

Because water gain and segregation are minimized by Duraplastic's air-entraining feature, the resulting concrete is fortified against the effects of freezing-thawing weather. (Left, Administration Building, McLaughlin Field, Hot Springs, Ark. Architects: Erhart, Eichenbaum and Rauch, Little Rock; contractors, Peterson & McFadyen, Little Rock.)

YET DURAPLASTIC* COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ATLAS® **DURAPLASTIC**

AIR-ENTRAINING PORTLAND CEMENT

A UNIVERSAL ATLAS PRODUCT

ENR-9-117

Makes Better Concrete at No Extra Cost

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

ENGINEERING NEWS-RECORD

FEBRUARY 1, 1951 Vol. 146 NO. 5

Wage-price pegs put brakes on rising construction costs

Materials prices frozen at maximum charged during 17 days preceding January 26—Wages for the time being cannot rise above rates paid on January 25

Last week's freeze of wages and prices may put a brake on the upward trend of construction costs. Materials prices are frozen at the maximum charged during the 17 days preceding the order of Jan. 26. Wages for the time being cannot go higher than the rates paid on Jan. 25.

Materials and building products—blanketed under the general order applying to "all commodities"—hereafter shall sell only at the ceiling price, regardless of any contract or other obligation previously signed. The price order covers both commodities and services, but it exempts prices and rentals for real property and rates or fees for professional services. Likewise exempted are rates charged by public utilities, including common carriers in the various branches of transportation.

• **Equitable policy expected**—Wages and salaries are not frozen with equal rigidity. Petitions for approval of increases in "wages, salaries and other compensation" may be filed with the Wage Stabilization Board of the Economic Stabilization Administration. Further, the WSB hoped this week to replace the brief wage order of Jan. 26 with a national wage stabilization policy.

This policy has presented knotty problems to the WSB. The board's struggles to work out an overall policy caused some slight delay in issuing last week's combination wage-price freeze orders. The dual regulations came out just one week after Eric A. Johnston became head of ESA.

All signs last weekend pointed to a wage policy that would:

(1) Permit increases to match rises in the cost of living.

(2) Allow all workers to get wage hikes equivalent to the general increase "pattern" of last year.

(3) Concede reasonable leeway in correcting individual, industrial, and possibly even regional inequities.

Since the outbreak of Korean hostilities at the end of June, the "pattern" in many industries has taken the form of a wage boost of about 10%.

• **Wage increases** — Construction wages on a national average have increased 3.5 to 4% since July 1. Overall, therefore, wage rates of the construction and building trades workers would be in line for a further 6% upward adjustment on the basis of the policy being talked about last weekend. But these increases would apply selectively. Some trades in certain localities have already received increases of 10% or more. These workers would not be entitled to further boosts under the proposed policy.

Wage-price controls slowed the upward swing of construction costs during War II. The ENR index of construction cost went up 17.8% from 1940 to 1945. In the five years since 1945, the index has risen more than 70%. Similarly, the ENR building cost index rose 27.2% during the five war years and has increased more than 60% since 1945.

Price-wage regulations invoked last week are expected to be equally effective for the short pull. But what may happen later when suppressed inflation gets loose is anybody's guess.

Wage adjustments will come under the direct control of the WSB, headed by Cyrus S. Ching as chairman, and the ESA chief, Administrator Eric Johnston. But Ching's WSB is expected to have the advice of a construction industry wage adjustment board, similar to the one set up in the labor department during War II (ENR, Jan. 25, p. 24).

Price levels for construction material apparently are frozen pretty tight. But even there, adjustments will have to be made to take care of wage increases in the supplying industries. For basic materials, these adjustments might come close to the percentage increase for labor.

• **To the point**—The ESA price order went straight to the point. It said, "You shall not sell, and you shall not buy . . . any commodity or service at a price exceeding the ceiling price." Defining the legal price, it went on, "Your ceiling price . . . is the highest price at which you delivered (the commodity or service) during the base period to a purchaser of the same class." The base period is Dec. 19 to Jan. 25, inclusive.

Further, if a seller did not deliver the commodity or service during those 38 days, the order stipulates that his ceiling price is the highest price at which he offered it for base period delivery to a purchaser of the same class. The offer, says the order must have been made in writing.

NPA controls to hit heavy equipment

Materials will be allocated for the production of heavy construction equipment under the Controlled Materials Plan starting next July 1. Much of the equipment will go into direct military use, but there will be some for entirely civilian projects, also.

Except for what is needed for military purposes, the supply of materials for construction equipment will be determined entirely by the military demand for metals and other critical materials. This will mean a scaling down of production below 1950 levels, but the exact level is still to be set.

The National Production Authority and other government agencies now are working out the rates of production to be permitted under CMP for construction and other essential industries. The armed forces, of course, will get all the equipment they need. The amount of production for other projects will be determined by measuring the materials requirements of essential programs against the supply of materials left over after all military demands for critical materials are met.

To arrive at this determination NPA has directed several other agencies to help it come up with the requirements for a number of construction programs that have been declared essential. These programs and the agencies compiling their quarterly equipment requirements for 1951 and 1952 follow:

(*Continued on page 24*)

14 agencies help NPA in equipment control

Many groups will be working out requirements for essential construction programs

(*Continued from page 23*)

Federal Civil Works—Corps of Engineers, Department of the Army; Civil Acronautics Administration (airports); Atomic Energy Commission; Veterans Administration (hospitals); Bureau of Public Roads; General Services Administration (buildings), Housing and Home Finance Agency (housing).

State and Local Works—Federal Security Agency (schools and hospitals); Housing and Home Finance Agency (housing); Bureau of Public Roads.

Private Construction—Housing and Home Finance Agency (housing); NPA (other projects, and maintenance of existing equipment); Defense Power Administration (electric utility construction); Petroleum Administration for Defense (oil and natural gas projects).

Foreign Needs—Economic Cooperation Administration.

Specific items of equipment which will be supported by materials allocations include tractors, both track and wheel types; power cranes, shovels and draglines; scrapers, road graders, trucks and trailers, concrete mixers and pavers, road rollers and compactors.

The claimant agencies for the various "essential programs" are expected to report their equipment needs to NPA by March 1. The materials to be allowed for each program then will be decided by National Production Authority's program requirements division.

Combine for overseas

Atlas Constructors has been formed by five big contractors as a joint venture to handle major overseas construction. Morrison-Knudsen Co., Inc., of Boise, Idaho, and New York, N. Y. is the "sponsoring contractor," with Bates & Rogers Construction Corp., Chicago, Ill., Blythe Bros. Co., Charlotte, N. C., and New York, N. Y., Ralph E. Mills Co., Salem, Va., and Nello L. Teer Co., Durham, N. C. as associates in the organization.

F. N. Benson is administrative manager and A. J. Kissinger is export manager for the new combination. Atlas has opened offices at 42 Broadway, New York City, and is recruiting 600-700 skilled Americans for major work outside the U. S.

TOP MEN AT INTERNATIONAL CONFERENCES—Leaders at the conferences on hydraulics, large dams and irrigation in New Delhi, India, during January. L. to R.: Gail A. Hathaway (U. S.), chairman of U. S. delegation and president-elect of the ASCE; Andre Coyne (France), president of the International Commission on Large Dams; A. N. Khosla (India), president of the International Commission on Irrigation and Canals; and Vincent de Ferraati (Great Britain), chairman of the World Power Conference.

Work starts on testing ground for atomic weapons

The Robert E. McKee Construction Co. of El Paso, Tex. and Los Angeles, Calif., has started work on a $500,000 contract for the Atomic Energy Commission on the 5,000 sq mi Air Force Las Vegas Bombing and Gunnery Range near Indian Springs, Nev., 46 mi northwest of Las Vegas. The contract is the first step in the $5,000,000 long range program for the new atomic weapons testing ground of the AEC Los Alamos Scientific Laboratory which handles weapons research, productive and testing phases of the atomic energy program.

Speed appears to be the most important factor. The present contract was awarded the McKee concern primarily because they had enough men in their organization cleared by the FBI to begin at once.

The McKee company took a 90-day lease on a building at 817 South Main St., Las Vegas for its headquarters.

The project will involve several other sizable contracts, which will be let on a competitive basis.

NAHB seeks solution on materials

Many questions were raised, but few answers were found to the 1951 home-building problems during the seventh annual meeting of the National Association of Home Builders last week in Chicago. The biggest question was material supplies.

Until the armed forces decide how much critical building materials they'll need—estimated by some to be at least 20% of total production—home-builders can't begin to estimate how much will be left for them.

Estimates of the number of houses to be started this year ranged from an optimistic 850,000 units to slightly more than half that number. Prefabricated home builders, however, say they will double their 1951 production of 55,000 houses this year, and that they could triple it if necessary, to provide quick and low-cost housing in critical defense areas.

Other speakers at the four-day meeting—attended by over 15,000 persons—brought out the facts that: cut-throat competition among builders should be avoided, while raiding material supplies will produce unnecessary strain on production; more careful planning and intelligent management of building operations are needed; more intensive research is needed in the application of construction methods and in the use of materials; especially non-critical materials. These are a few of the measures needed to keep costs down, speed construction and permit a greater number of houses to be built this year.

• **Home builders stand ready** to aid the Defense Housing Act, but these are some of the things they want: No unnecessary and unrealistic federal restrictions; relaxation of the credit curbs of last Oct. 12, in defense areas; FHA insurance up to 90% loans on multi-family and one- to four-family units where necessary to provide housing in defense areas; extension of the Wherry Act (to provide housing for the Army and Navy) for at least two years, and its amendment to include AEC projects; and limited federal aid, where necessary, to local governments for utilities and community facilities in defense areas.

New officers of the NAHB are: W. P. Atkinson, Oklahoma City, president, succeeding T. C. Coogan, Miami; vice-presidents, A. E. Brockbank, Salt Lake City, and E. M. Spiegel, New Brunswick, N. J.; R. G. Hughes, Pampa, Texas, secretary, and Nathan Manilow, Chicago, treasurer.

Garage-shelter advocate – Robert Moses, New York City park commissioner, proposes that bomb shelters be constructed as garages to ease traffic congestion and to avoid "holes in the ground which would be useless for civilian purposes."

CIVIL DEFENSE

Instructions to contractors—Detailed recommendations to construction general contractors concerning best methods for clearing shattered areas and restoring essential facilities after an enemy attack by atomic bomb or otherwise have been sent to local organizations of The Associated General Contractors of America, and the Federal Civil Defense Administration is preparing manuals for the use of construction industry facilities in such circumstances. It also makes suggestions as to biological and chemical warfare.

Waterworks protection—Ohio chapter of the A.W.W.A. is planning a pool of waterworks experts to take over and re-establish domestic water service in any Ohio city if and when water service is interrupted by attack. In the meantime, watchmen have been assigned to patrol the reservoirs and tanks of Cincinnati.

Emergency public works operation—The Erie County (Buffalo, N. Y.) Office of Civil Defense is discussing emergency sources of water, gas and electricity; a running inventory of all public and private heavy construction equipment and materials; emergency repair crews set-up; and primary and secondary routes into and out of the city and county.

Bond issues for defense—Gov. Paul A. Dever of Massachusetts says that the state's program for matching federal funds to build bomb shelters and to stockpile medical supplies probably will be financed by bond issues. He estimates the cost of the stockpiling at $10,000,000. In Florida the state needs to raise $3,150,000 to match federal funds for bomb shelters in that state.

Four dam sites reviewed

Defense needs have brought about a revival of interest in four Oregon and Washington power projects, which have been blocked by opposition from the fishing industry.

H. M. McIntyre, chief of the power program section of the Bonneville Power Administration, lists these proposed dams as headed for new backing because of the international situation: Pelton Dam on the Deschutes River in central Oregon; Mayfield and Mossy Rock Dams on the Cowlitz River, and Yale Dam on the Lewis River in southwestern Washington.

CAP FOR THE CAPITOL—This decorative finial, made of inconel, was placed atop the dome of the Washington State Capitol at Olympia to replace a heavier capstone which had to be removed after the 1949 earthquake. The finial is hollow, consisting of 19 sections, that were welded together after being spun into the proper shape.

Five cities to finance $23 million sewerage

A charge of 35¢ per month will be levied against each dwelling unit in Oakland, Calif., and five neighboring cities to finance costs of the East Bay Municipal Utility District's $23,500,000 sewage disposal project.

Scheduled to begin in July, the charge will be in addition to a property tax rate of 11¢ per $100 of assessed valuation currently in effect in those cities. Funds from the two sources will cover operation, maintenance, and bond interest and retirement. The system's 1951-52 operating expenses have been estimated at $1,637,538, 60% covered by the 35¢ tax, and 40% by the property tax.

The 35¢ monthly charge was arrived at by study of EBMUD water consumption figures showing that the average household consumes 12,500 cu ft of water annually, with 10,000 cu ft returned through the systems.

In presenting the proposal before officials of the six cities, H. A. Knudsen, manager of EBMUD's sewage disposal division, pointed out that if costs of the project were to be covered by property taxation alone, the 11¢ tax rate would have had to be boosted to 28.4¢ per $100 of assessed valuation.

Consultant group steps out of Iran

After nearly three years of working with the government of Iran on its plans for improving economic conditions, an 11-member group of U. S. engineering firms had stepped out of the Iranian picture last week.

Paul B. Coffman, president of Overseas Consultants, Inc., said that his group "is concluding its work with the (Iranian) Seven Year Plan Organization and withdrawing its consultants, after reaching a mutually satisfactory basis of termination" of its agreement with the Iranian government. With the private firms out of the picture, the field of Iranian development was left entirely to representatives of the U. S. State Department, which entered the work some months ago (ENR Nov. 9, 1950, p. 25).

• **OCI first began its work with Iran** more than two years ago (ENR Nov. 3, 1949, p. 34) when it was invited by the Iranians to survey the feasibility of a $650 million program for improvement, which was to include rail and other transport facilities, agricultural aid, establishment of some industry, and some power and irrigation developments.

The private firms reported on the plan, then were engaged by the Iranian government—through the Seven Year Plan Organization—to act as consultants. However, efforts to effectuate the plan—or parts of it—were not spectacularly effective.

Commenting on this phase, Mr. Coffman last week pointed out difficulties of financing (the plan was originally to have been financed from oil revenues); local politics, and a deteriorating economic condition which has brought with it social unrest.

As a result, Mr. Coffman said, OCI on Dec. 19, 1950, advised its resident vice-president in Iran that it would be willing to withdraw as consultant. The offer was accepted, with regret, by the Seven Year Plan Organization, to be effective as of Jan. 1.

OCI, however, continues to be active in work in other parts of the world, notably in Japan, where it has recently conducted a survey of private power potential.

Member firms are: Stone & Webster Engineering Corp.; Coverdale & Colpitts; Ebasco Services, Inc.; The American Appraisal Co.; Ford, Bacon & Davis, Inc.; Jackson & Moreland; Madigan-Hyland, Inc.; F. H. McGraw & Co.; Sanderson & Porter; Standard Research Consultants Inc.; the J. G. White Engineering Corp.

Ohio road plan to cost 5.3 billion for 102,299 miles of new roads

Alternate programs to cost $3,591,240,000 for 10 years; $4,493,680,000 for 15 years; higher taxes and license fees seen

A 20 year Ohio Program Commission plan involving the spending of $5,386,760,000 for road repair work and improvement on 102,299 miles of highways and streets has been reported in Columbus.

Alternate programs to cost $3,591,240,000 over a ten-year period or $4,493,680,000 over a 15-year period are also in draft form.

Adoption of any of the programs would make Ohio's highway system able to accommodate an expected 35% increase in vehicle mileage by the year 1970. To finance the program an increased highway-users tax based on a ton-mile basis is favored, along with probable increased gas taxes and higher license fees.

Tentative proposals are that highway users stand 82½% of the cost of the program with 17½% to be borne by nonusers, such as abutting property owners. A fiscal subcommittee may offer a proposal that would increase the highway taxes of trucks and buses by making their average fee $87 a year instead of the present $32.

Will widen roads—The proposed programs seek to reconstruct, widen or resurface 29,307 miles of roads now substandard in safety and capacity, plus the repair of 7,348 bridges, widening and improving them.

The programs would build 228 bridges, and 90 miles of expressways in Cleveland, Cincinnati, Columbus, Toledo, Akron and Dayton at an estimated average cost of $3,750,000 per mile or a total cost of $337,500,000.

New four-lane highways on rural state routes are contemplated—some 476 miles and reconstruction of 337 miles of existing two-lane or three-lane rural state routes as two, three, and four-lane roads plus improvement of 14 miles of existing four-lane roads at a total cost of $256,370,000.

Grade crossings planned—At least 136 rail-grade crossings would be eliminated by the program, and grade separations be put in at 86 points where important highways cross each other.

Around 1,975 miles of two-lane rural state highways are due to be reconstructed, to improved standards of pavement width, grades and sight distances. Secondary state highways are due for 886 miles of secondary state highways.

Thousands of old, narrow, and weak bridges on county roads would be replaced under the plan and 9,206 miles of county roads be improved.

Gravel surface for 1,200 miles of earth township roads, improved surface for 1,300 miles of township gravel roads and other improvements for a total of 9,528 miles is also in prospect.

Included in the plans is money for improved maintenance of all roads plus care for reconstruction or other improvement of rural state highways, city streets, county and township roads now in improved condition which will become obsolete over the 10-year, 15-year or 20-year program.

The engineering survey points out that Ohio needs to bring its roads and streets up to a tolerable standard. The report is a non-political study of the highway funds and seeks an equitable distribution of such funds among the state's counties, cities and townships. To provide this study the Ohio Program Commission of 1947-1948 formed a highway subcommittee which did much of the work for the final study.

N. C. gas tax discussed; league asks $5 raise

A proposal to raise North Carolina automobile license plate charges and state gasoline taxes to raise an estimated additional $9,500,000 a year for use in paving city streets, has been made by the North Carolina League of Municipalities.

The additional money would be made available to cities and towns in addition to the $2,500,000 a year which they now receive from the state for street work.

The plan is to increase automobile tag charges by $5, and up gas taxes one half-cent a gallon. The league's proposal was previously announced by Gov. Kerr Scott.

The governor stated that North Carolina would be willing to take over the street construction of municipalities in the event of higher taxes, and suggested a $5 instead of a $3 increase in the automobile license tax, first suggested by the league.

Governor Scott also said that the state would need between $8,000,000 to $9,000,000 to do the job.

AERIAL SNOW BUS—This 3.2-mile aerial bus line takes winter sports fans up the slopes of Mt. Hood in Oregon—from Government Camp on Mt. Hood Loop Highway. Steel supporting cables are stationary; four bus wheels are driven by two gasoline engines to propel the car. Pointer-Willamette Co., Portland, was general contractor. John A. Roebling's Sons Co., Trenton, N. J., were consultants.

Ohio plans 500 postings of weak, narrow bridges

Ohio has 9,690 bridges of which one-fourth are either too weak or too narrow. This is the report of the State Highway Department.

Because of failing bridges only three of Ohio's main routes are capable of carrying a full legal load from border to border. The maximum legal load is 78,000 pounds or 39 tons.

With 1,000 bridges posted already to keep stress from exceeding 150% of design specifications, T. J. Kauer, highway director, expects the total to rise to 1,500.

During 1950, there were 43 complete bridge failures and 109 part failures, department records show.

The three routes clear of weak bridges are the east-west routes—Routes 20, 40 and 50.

Truck weight limits raised

A bill to increase the gross weight limit from 48,000 to 72,000 pounds for truck loadings and increase the length to American Association of State Highway Officials standards is before the Texas legislature.

A bill to increase maximum length of buses from thirty-five to forty feet also has been introduced. Restrictive bills also have been presented to allow local officers and state police as well as state license inspectors to stop overloaded trucks. Another would suspend certificates of common carrier trucks carrying excessive loads.

CONSTRUCTION BUSINESS

Public housing up 283% so far in '51

More mass housing, 7% more, went under contract in the first four weeks of 1951 than in the corresponding weeks of 1950. But a vast change in character has taken place. Public housing is up 283%, private building of housing units is down 21% from their corresponding volume a year ago. Last year almost 91% was private, this year 67% is privately owned. These ratios come from January, 1951, mass housing contracts valued at $254,224,000 as reported by ENGINEERING NEWS-RECORD.

For the whole record-smashing year of 1950, ENR reported private mass housing totalling $3.1 billion and public housing totalling $359 million. Thus for the year private builders supplied 90% of the new housing and public housing agencies, 10%.

These dollar values for mass housing show trends very similar to those for total housing starts as estimated by the U. S. Dept. of Labor, Bu. of Labor Statistics.

Starts hit the all time high of 1,395,600 in 1950. This beats 1949's previous record by 36%, and the long-standing 1925 record by 49%.

Housing curbs set by the government are designed to produce 800,000 to 850,000 starts in 1951. One anonymous housing authority believes 1,000,000 will be closer to what will actually get under way. Defense housing needs will call the turn.

The big states in public housing in 1950 were:

1.	New York	$66,735,000
2.	Massachusetts	46,719,000
3.	Connecticut	40,308,000
4.	Pennsylvania	19,676,000
5.	Florida	16,336,000

The big 5 in private housing are:

1.	Texas	$449,711,000
2.	New York	445,813,000
3.	California	409,323,000
4.	Pennsylvania	320,472,000
5.	Ohio	243,636,000

Prices continue to climb

The wholesale price index for building materials moved on up to 224.2 for the week of Jan. 23 as reported by the Bureau of Labor Statistics. This is 0.4 of a point in one week, 1.8 points or 0.8% since Jan. 2, the date originally expected to be set for the price freeze rollback by Economic Stabilization Agency. The base for this BLS index is 1926 = 100.

The metals and metal products wholesale price index moved up to 188.4, only 0.1 of a point, during the week of Jan. 23. But it is now up 1 point or 0.5% since Jan. 2.

Ask more Wherry housing

The National Association of Home Builders, at its annual meeting in Chicago, Jan. 21-25, recommended that the Wherry Act be amended to include sites on Atomic Energy Commission property in addition to the military reservation land for lease to "sponsors" to build and operate rental housing to be occupied by government personnel.

On military (Wherry Act) housing under Title VIII of the National Housing Act, signed August 8, 1949, the Defense Department and FHA so far have about 4,000 occupied units and about 12,000 or 13,000 under construction—on a total of 34 projects. In various stages leading up to FHA commitments are another 51 projects with about 22,000 units. The Army, Navy and Air Force are taking bids and making awards of new projects at intervals.

Budget figures for Title VIII mortgage insurance are listed in the following table:

Aggregate Amount	Mortgages Insured	Commitments Outstanding
1950, Actual	$59,753,900	$28,265,900
1951, Est.	344,873,900	345,421,400
1952, Est.	648,623,900	13,321,400

These figures would indicate that roughly 100,000 Wherry Act housing units for families of uniformed and civilian personnel at military posts would be started—and many completed—by June 30, 1952.

Cement stocks up a little

Portland cement producers turned out 20,226,000 bbl of finished cement in November and shipped only 19,791,000 bbl according to most recent report of the U. S. Bureau of Mines. So low stocks increased to 6,380,000 bbl from their October low of 5,958,000 bbl, the next to lowest on record. Only in October 1947 have they been lower. Then they were down to 5,668,000 bbl.

For the 11 months of 1950 production was up to 206,939,000 bbl, an increase of 7% over 1949 for the same period. Shipments, however, were 215,311,000 bbl, up 11%.

November, 1950 production was 12% greater than for 1949, shipments were 15% higher; 150 plants were operating in 1950, 147 in 1949.

Construction equipment business 8 times prewar

Construction equipment "dealers" sold $786,561,000 worth of machines in 1948. This is eight times the $96,556,000 worth they sold in 1939, 14 times what they sold in 1929.

In 1948 there were 936 "establishments" selling construction machinery; in 1939, 404; in 1929, only 252. Stocks on hand at the end of the year were valued at $132 million in 1948, at $16 million in 1939 and at $7 million in 1929.

This measure of mechanization of construction is from a wholesale trade report just released by the Bu. of the Census, U. S. Dept. of Commerce.

Lumber orders top output

New orders for lumber continue to pour in faster than production is tuned up to handle them. For the week ending Jan. 20, new orders exceed output by 35.9% and shipments are 7% above production.

Production is 70.7% higher than for the same week last year, shipments are 48.4% higher and new orders, 26.5% higher.

Shipment of lumber for the year to date have run 4.7% above production, new orders have run 34.6% above.

These figures are based on reports from 451 mills reporting to the National Lumber Manufacturers Association.

Air Force training expands

Both the House and Senate Armed Services committees have approved Air Force plans to spend $337 million to expand 13 training bases. The money comes out of funds already appropriated and no further approval is necessary to provide facilities to train fliers for the 100 air groups planned. (ENR Jan. 25, p. 23)

Bases to be expanded are: Texas: Amarillo AFB, $15.8 million; Bryan AFB, $6.2 million; Connally AFB, Waco, $5 million; Lackland AFB, San Antonio, $30.2 million; San Marcos, $780,000; Sheppard, Wichita Falls, $14.4 million; Randolph, San Antonio, $3.7 million. Bases in other states are: Kessler AFB, Biloxi, Miss., $35.9 million; Camp Kohler, Sacramento, Calif., $64.2 million; Pinecastle, Orlando, Fla., $30.4 million; Sampson, Geneva, N. Y., $18.6 million; Fort Snelling, Minneapolis, $64.5 million; Wichita, Kan., $37.5 million.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 73, went to press.)

Alumina Plant—A $55,000,000 alumina plant will be built and operated by the Aluminum Ore Co., a wholly-owned subsidiary of the Aluminum Company of America, Pittsburgh, Pa., at Bauxite, Ark. Alcoa will act as own general contractor for project.

Dam and Hydro Electric Plant—Pacific Power & Light Co., Portland, Ore., plans dam and hydro-electric plant on Lewis River, near Woodland, Clark County, Washington. Cost will be about $26,000,000. Corbett McLean, Portland, is engineer.

Blast Furnace—Armco Steel Corp., Middletown, Ohio, has awarded contracts for $35,000,000 steel plant at Middletown. Arthur G. McKee Co., Cleveland, will build blast furnaces; Wilputte Coke Oven Division, Allied Chemical & Dye Corp., New York, N. Y., will install coke ovens and by-products plant; and F. H. McGraw Constr. Co., Middletown, Ohio will construct railroad tracks, roads, sewers and other utilities.

Power Development—Aluminum Company of Canada, Ltd., Montreal, Que., plans power development on Peribonka River, 35 mi. from Devils Falls. To cost about $25,000,000. This is in addition to similar project proposed for the Lake St. John District.

Housing Project—Louisville Municipal Housing Commission, Louisville, Ky., awarded general contract for the construction of South Housing Project at Louisville, to Sullivan Cozart, Inc., Louisville, at $6,084,000. Other contracts will bring total cost to $8,032,-558. Fred Hartstein, and Louis & Henry, Louisville are architects. E. R. Ronald & Associates, Louisville, are engineers.

Water Filtration Plant—Bids will be asked soon on the $85,000,000 water filtration plant at Chicago, Ill., as project has just been approved by U. S. Engineers. Alvord, Burdick & Howson and Greeley & Hansen, both of Chicago, are consulting engineers. W. W. DeBerard is city engineer.

Hutsonville Power Station—Central Illinois Public Service Co., Springfield, Ill. awarded contract for general construction of Hutsonville Power Station, at Hutsonville, Ill., to LaCrosse Dredging Corp., Chicago; generator to General Electric Co., Schenectady, N. Y., and steam generators to Combustion Engineering-Superheater, Inc., New York, N. Y. Sargent & Lundy, Chicago, are consulting engineers.

Hospital—Oregon Board of Higher Education, Eugene, Ore., plans State Teaching Hospital at Portland. Estimated cost will be about $6,000,000.

Water Tunnel—City of Colorado Springs, Colo., plans 800 ft. Blue River Diversion Tunnel for water supply to cost $9,000,000. Sewell Thomas, Denver, consulting engineer.

Housing—District Public Works Office, Sixth Naval District, Naval Base, S. C., will receive bids Feb. 28, from builder-operators for the construction of military housing at U. S. Marine Barracks, Camp LeJeune, N. C. Cost will be about $6,586,317.

Pier—U. S. Engineer, Washington, D. C., is making preliminary surveys pending decision to reconstruct Hawkins Point Pier, for ammunition loading, at Baltimore, Md. Cost is expected to be about $5,000,000.

Housing—Robert E. McKee General Contractor, Inc., Dallas, Tex., was low bidder at $7,191,000 on St. Bernard Housing Project, in New Orleans, La., when the City Housing Authority opened bids Jan. 26. Nolan, Norman & Nolan, New Orleans, are architects.

Roads — Pennsylvania Highway & Bridge Authority, Harrisburg, awarded contract for divided highway in Allegheny County to Dianardo, Inc., Pittsburgh, Pa., at $4,051,893 and for similar project in Montgomery County to Francis A. Canuso & Son, Philadelphia, $3,859,750.

Bridge—City of New Westminster, New Westminster, B. C., plans five-span bridge from New Westminster to Lulu Island. Cost is estimated at $4,700,000.

Plant Expansion — Cameron Iron Works, Inc., Houston, Tex., awarded a $4,950,000 contract for plant expansion at Houston, Tex., to W. S. Bellows Co., Houston. Lockwood & Andrews, Houston, are engineers.

Housing—Boston Housing Authority, Boston, Mass., plans a $5,000,000 housing project in Dorchester. Desmond & Lord, Boston, are architects.

Tunnel—United Concrete Pipe Corp. and Ralph A. Bell, Baldwin Park, Calif., have been awarded a $2,175,-315 contract to construct the West Canal-Frenchman Hills Tunnel in Washington, by the Bureau of Reclamation, Denver, Colo.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926	1949
Constr. Cost.	Jan.'51	530.73	255.12	111.26
Bldg. Cost.	Jan.'51	392.06	211.93	111.45
Volume	Dec.'50	759	308	219

Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Feb. 1, '51	Cumulative 5 wks 1951	1950	% chge
Federal	$13.6	$297.2	$298.2	−0.4
State & Mun.	65.3	366.0	259.3	+41
Total Public	$78.9	$663.2	$557.6	+19
Total Private	156.2	838.8	518.6	+62
U. S. Total	$235.1	$1,502.0	$1,076.2	+40

Contracts by type of work

	This Week	Cumulative 5 wks 1951	1950	% chge
Waterworks	$3.0	$15.5	$25.8	−40
Sewerage	7.7	36.9	21.5	+72
Bridges	5.5	33.2	30.5	+ 9
Highways	26.1	85.3	81.3	+ 5
Earthwork, Waterways	5.7	20.4	35.0	−42
Buildings:				
Public	20.4	350.2	298.2	+17
Housg., pub.	6.4	89.8	23.2	+287
Housg., priv.	18.3	189.1	282.8	−33
Commercial	6.3	87.3	113.4	−23
Industrial	128.3	507.0	83.1	+510
Unclassified	7.4	87.3	81.4	+ 7

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $100,000.

New capital for construction

	Cumulative 5 wks 1951	1950	% chge
Corporate Securities	$213.8	$116.4	+84
State and Mun.:			
Excl. housing	154.0	149.2	+3
Housing	62.2	105.8	−41
Fed. RFC-NPA	73.4	N.A.	N.A.
Total Non-Federal	$503.4	$371.4	+36
FEDERAL	2,602.5	N.A.	N.A.
Total Capital	$3,105.9	N.A.	N.A.

Pay-as-you-go industrial tract built

Republic Heater Corp., Huntington Park, Calif., has announced plans for a $1,000,000 plant in the Los Angeles International Industrial Tract. The 90,000-sq ft structure will be ready by April 1.

Republic, in joining the unique pay-as-you-go construction program begun a year ago by Samuel Hayden and S. Charles Lee, Hayden-Lee Development Co., takes its place alongside nearly 40 other plants which have risen on the tract within a year.

The Hayden-Lee installment plant-buying plan is unlike any construction financing development in the nation.

The brainchild of Hayden, it allows "good industrial risks" to pay 15% down and take as long as 180 mo to pay the balance. The remaining 85% of the plant cost is financed jointly by the builders and by the Pacific Mutual Life Insurance Co. Pacific Mutual assumes 42.5% of the financing, secured by a first deed of trust; the remaining amount is assumed by the builders, secured on a second mortgage.

• **Your down payment**—After the initial down payment, the deed is handed over to the plant owners, subject only to the mortgages against it.

For small plants which are excellent risks, the developers will even take a "down payment on the down payment." By this financing, the prospective plant purchaser, needing say $10,000 for a down payment, pays $2,500 when the deal is signed, another $2,500 after the building is completed, and plant officials can then assume small personal loans for the remaining down payment.

Monthly rent—actually payments on the trust deeds—amount to from 4 to 5¢ per sq ft of floor area per month. Another 1¢ a month per sq ft of undeveloped area (parking lots, grounds, etc.) is added to this. In addition, since the plant in effect now owns its building, insurance and taxes must be borne by the new owners.

• **Helps the small**—Hayden says he isn't an industrial Samaritan—just a hard-headed businessman with confidence in the small to medium sized industry which needs new quarters and hasn't got ready cash for new construction.

Excess profits taxes is the real reason behind this pay-as-you-go financing. Hayden wouldn't take cash for the construction if a plant owner wanted to pay him. The reason: if Hayden had built and rented the factories to the industries, he'd be in the 90% income bracket. But by collecting on the installment plan, he can take 12½% of the profits—and stay in a lower, more congenial bracket.

While plenty of other builders wouldn't gamble as Hayden does, he says it really isn't a gamble at all. The secret: "Knowing how to select your risks. Select only top-notch industries with progressive management and you don't have to consider it a risk," he says.

The developers will, in a few cases, build a plant and lease it. In this case, no 15% down payment is made and the lease must run for 10 yr or more. However, of the some 40 industries on the tract, fully 90% are buying their plants, not leasing.

N. E. Steel Corp. seeks site near Waterford, Conn.

A plant site has been selected for New England's steel mill, for which the federal government has issued a certificate of necessity (ENR, Jan 18, p. 24)

A 1,600-acre tract has been selected by the New England Council and the Federal Reserve Bank of Boston on Long Island Sound near Waterford, Conn., according to John E. Kelley, consulting engineer.

The site has 8,000 feet of waterfront. It is on a shelf of granite near water level and will require no piling and no dredging. There is a depth of more than 80 feet of water off the site and the ships carrying ore and coal will not be required to make any turns.

N. Y. State building codes behind times, study shows

New York State municipal building codes and ordinances generally fail to stand up under tests for adaptability to advances in construction methods, according to a comparative analysis of building laws carried out by the New York State Building Code Commission.

According to George Bain Cummings, commission vice-chairman, a study of the laws of 245 municipalities has been made subjecting codes and ordinances to detailed examination. The technical staff of the commission found one to four of the following major deficiencies in most codes:

Obsolescence of provisions, resulting from failure of municipalities to revise regulations in the light of technical progress.

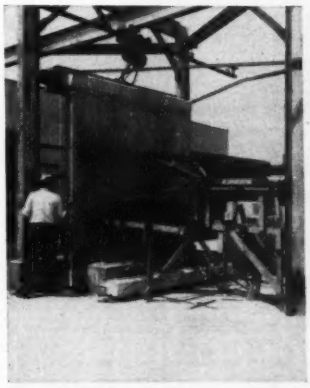
Inadequate rules governing plumbing, fire protection and safe resistance to wind and snow loads.

Inflexibility arising from rigid specifications making difficult the use of materials not in strict conformity with such provisions.

Dissimilar requirements in codes from basic standards for structural strength and fire resistance established by authoritative agencies.

The commission found ordinances of smaller communities lacking in standards of any kind. In many, building permits are issued at the discretion of local legislative bodies without technical guidance, the report said.

This makes for inefficient, old fashioned, and too expensive construction.



PRETESTED CEMENT CURTAINS—Hollow, unreinforced concrete panels undergo tests (left) for approval under New York's building code, then are installed as curtain wall in city's Queensview housing project. Panels are 8 in. thick with 5-in. air space. Widths and lengths vary. Concrete is 4,000 psi, or better, mixed with an air-entraining agent and cured with aid of heat. Test shown is a simulated 120-psi wind load. Panels also took 250 freeze-thaw cycles, as well as fire exposure followed by water-drenching. Panels are manufactured by Precast Building Sections, Inc., New York, N. Y.

A 12-year master plan proposed for Pennsylvania highways

A 12-year master plan for all Pennsylvania highways has been announced by that state's Highway Planning Commission. The report calls for the expenditure of $2½ billion to bring the commonwealth's roads and bridges up to standards adequate for 1962 traffic and maintenance.

The Highway Planning Commission's proposals:

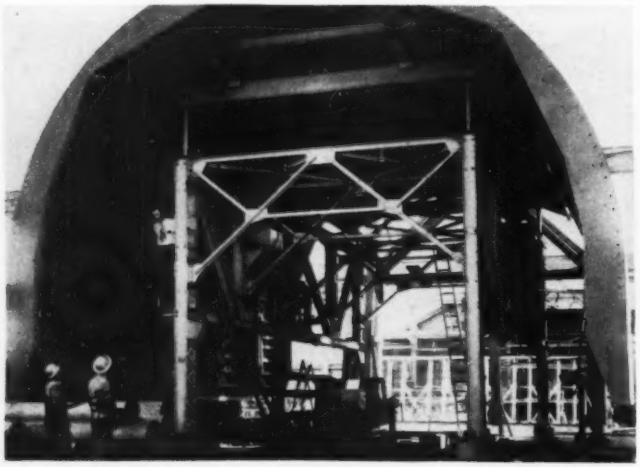
- ...would provide more money for local rural roads.
- ...recommend that state highway grants to townships, boroughs, and cities be increased from $10 million to $15 million per year—or $180 million for 12 years—with 20% earmarked for construction.
- ...call for major expenditures for limited-access expressways, wider streets, tunnels, bridges, and bypasses in cities—to alleviate the serious statewide problem of traffic congestion.
- ...classify roads into 4 new systems and propose the transfer of major roads to the state and of lesser roads to local control.
- ...urge the establishment of joint "Highway Work Units" to enable small local administrative units to pool their resources in order to obtain modern road equipment and technical personnel.
- ...advocate that only those units which meet the standards of efficiency set for these Highway Work Units be given state aid for construction.
- ...warn against overemphasizing toll roads, recommending an exact limitation on each toll project so that its revenue cannot be used to finance others.
- ...propose that state financial aid be granted on a formula of 50% for population and 50% for mileage.

The commission found that Pennsylvania is now spending more than $200 million annually on roads, and that 54 percent of all major roads in the state must be rebuilt wholly or partly within the next 12 years.

Boston artery time cut from 2½ years to 18 mos.

To speed traffic between the Charlestown Navy Yard and the Naval Base in South Boston, construction of Boston's $34 million overhead central artery will be given priority for materials by federal officials. Construction time is expected to be cut from the planned 2½ yrs to 18 mos. (ENR Jan. 11, p. 29)

The First Naval District and the Army's First Corps Area consider the artery through the downtown section of Boston so vital to military movement, defense production and civilian evacuation, that it would be a "must" in an all-out war effort.



TELESCOPIC TUNNEL FORM—San Francisco's Broadway Tunnel constructors make use of two steel tunnel forms (one shown) for pouring and setting concrete. Hydraulically-operated "traveler" moves forms, which weigh 45 tons and measure 44 ft by 28½ ft. Morrison-Knudsen Co., Inc., is general contractor. (Photo from "Bay Region Business")

Auto owners note cost rise in vehicle operation

The nation's auto owners and truck operators will shortly find vehicle operation more expensive. Increased motor fuel and registration fees will be considered this year in at least 30 states. Ton-mile and mileage taxes will come up in at least 10 states.

Above this is the probability of a doubling of the present 1½-cent federal gas tax. The tip-off that such a proposal is in the making came from a confidential memorandum sent to state officials from the Washington headquarters of the American Association of State Highway Officials.

The doubling of the gas tax is part of a proposed general upward revision of federal excise taxes.

The proposed state gas tax increases range from one to two cents per gallon. A number of states propose to increase license fees on trucks. Another type of measure proposed, which will cut truckers' revenues, is the reduction in maximum axle weights permitted. The legislatures are apparently responding to public demand as a result of recent charges that big trucks are "breaking up" the roads.

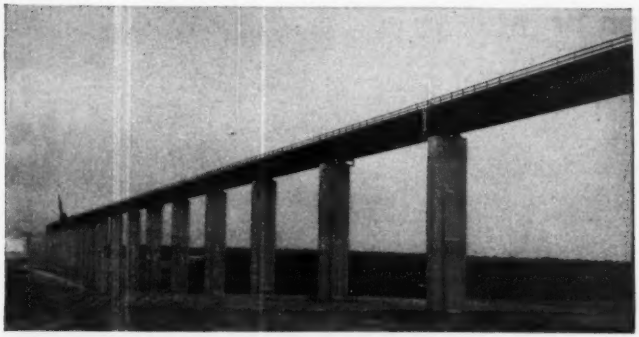
On the credit side, the legislatures of 12 states have proposals for "good roads" constitutional amendments to prevent diversion of road taxes for non-highway purposes. In 36 states new or additional proposals will be considered for uniform laws.

Government still plans to push Trans-Canada road

Canada expects to pay about $10,000,000 as its contribution to the paved Trans-Canada Highway (ENR Dec. 7, '50, page 19) during the fiscal year 1950-1951, according to Resources Minister Robert Winters. This is about half of the amount originally considered.

All provinces but Quebec and Nova Scotia have now signed agreements with the federal government for the construction of an all-weather paved highway across the dominion but progress has not been as rapid as was expected. Conditions have changed since the act was passed, fear of unemployment having been replaced by the first signs of a labor shortage in Canada.

As to the highway work in relation to the international situation, Mr. Winters said that "the federal government has made clear to the provinces the necessity of confining projects to essentials. If the provinces take the stand that the highway is essential, the government will have to consider their claims to further payments."



DRY LAND BRIDGE—The last of 25 deck plate girder spans going into place in the Missouri-Kansas-Texas Railroad bridge across the Brazos River near Whitney, Texas. Each girder is 121 ft, 10 in. long and 10 ft, 7 in. deep. There are two to a span. Structure will eventually cross a large lake backed up by the Corps of Engineers' Whitney Dam and Reservoir. Contractors participating are Virginia Bridge Co., Winston Brothers, and Massman Construction Co. Modjeski and Masters were the design engineers.

Plenty of water ahead for hydro-power

Water prospects for the Pacific Northwest this year are above normal, according to the Weather Bureau in its first water forecast for the year.

For the Columbia River at Grand Coulee Dam in Eastern Washington the Bureau predicts 87,000,000 acre-ft as compared to 92,450,000 last year, and a normal 71,500,000. Even with future precipitation at a record low the basin is assured of 90 percent normal runoff on the basis of moisture to date, the Bureau says.

Flow of the Skagit River at Concrete below the Seattle hydroelectric development is estimated at 11,200,000 acre-ft as against its average of 10,140,000 acre-ft.

Bureal of Reclamation reservoirs in Region 6 which includes Montana, Wyoming, South and North Dakota contain a greater amount of water than usual at this time of year. The prospect for sufficient water to provide for irrigation and hydro-electric power needs for the coming year are extremely good.

In Montana's Sherbourn Lakes, Fresno and Nelson Reservoirs which supply water for the 127,000-acre Milk River Reclamation Project there is more than 107,000 acre-feet of water in storage. This is in contrast with last year's 43,000 acre-ft and a maximum active storage for the three reservoirs of about 262,000 acre-feet.

In Wyoming Pilot Butte, and Bull Lake Reservoirs on the Riverton Project in central Wyoming now have about 114,000 acre-ft in storage as against last year's 34,200. Maximum capacity is around 186,000 feet.

Buffalo Bill Reservoir on the Shoshone River has in excess of 334,000 acre-ft of water in storage, as against 250,000 acre-ft last year.

South Dakota's Belle Fourche Reservoir has 68,000 acre-ft of active storage capacity filled, and the Deerfield Reservoir on Castle Creek in the Black Hills has 13,000 acre-ft in storage. Last year the amount was the same.

North Dakota's Heart Butte Dam on the Heart River now stores more than 59,000 acre-ft of water, within 9,000 of its total active storage capacity for irrigation. The reservoir will retain 350,000 acre-ft of water for the control of floods.

Stop pollution of Potomac, Water Control Board says

The Virginia state Water Control Board ordered the city of Alexandria to provide treatment by July 1, 1952, for the sewage it now dumps raw into northern Virginia waters.

In its first order, the board set up a tight 18-month construction schedule and told the city to report work progress an the tenth of each month.

In May of 1949 the city estimated this would cost $4,500,000. With respect to all of the city's sewage, the board order required these specific operating results:

1. Substantially complete removal of settleable and floating solids.
2. At least 60% removal of biochemical oxygen demand.
3. Disinfection by chlorination or other satisfactory method.

With some technical modifications the order also would cover the Washington hook-up scheme.

Water resources laws wrought in Capital

Basic water resources legislation to be recommended to the President is being worked out by his seven-man Water Resources Policy Commission at meetings in Washington, D. C., due to conclude Feb. 5. The commission's draft will propose legislation it deems necessary to carry out the 70 recommendations it made in Volume 1 of its report, submitted to the President Dec. 11 (ENR Dec. 21, p. 23, and Dec. 28, p. 15).

After the commission's broad bill goes to the President, it will be turned over to the Budget Bureau to get the comments of all federal departments and agencies that share responsibility for national policy and activities related to water and land resources. Several months will be required to collect these comments. The Budget Bureau then will have to coordinate the opinions of the agencies and write its own recommendations for the President. Further study and consultation will be necessary after the material reaches the White House.

Because of the lengthy work required, it appears obvious that the President cannot have a model bill ready to submit to the House and Senate during the current session of the 82nd Congress. The proposed legislation probably will go to Congress next year, during the second session.

Mechanical delays are holding up the printing of Volumes 2 and 3 of the commission's report. Volume 3 now is tentatively scheduled for release Feb. 12, with Volume 2 to follow on Feb. 26. In mid-December, Chairman Morris L. Cooke expressed the hope that Volume 3, "Water Resources Law," would be out Jan. 22, and Volume 2, "Ten Rivers in America's Future," by Feb. 6.

Niagara dam proposal studied by Engineer Corps

A plan to build a $30,000,000 dam across the Niagara River at Buffalo is being studied by the Corps of Engineers.

The Lake Survey Office of the corps in Detroit forwarded its report on the proposal to the Buffalo district office where it is being reviewed.

The object of the dam would be to develop hydro-electric power. The project would have a roller-type gate dam, in effect a dam with movable crest which, Stanley B. Hunt, head of the district engineering division says would reduce the river flow from 250,000 to 175,000 cu ft per second. The normal flow of the river is regarded as 200,000 cfs.

ALMOST 10,000-FT LONG, the asphaltic-concrete-paved instrument runway will safely land today's fastest jet planes and biggest propeller-driven transports. It's outlined at night by 200-ft-apart high-intensity lights.

"World's best airport"— Baltimore's Friendship field

Whenever civil engineers, architects and flyers get together to plan a new airport, they're faced with many ticklish questions. Some problems can be solved on the basis of recent comparable experience; other decisions have to be made on educated guesses. All the knowledge needed to design an airport in the face of rapidly changing airplane technology and increasing air travel just isn't in the books.

Some of these critical phases of airport practice are: The economic and technical background for site selection; airplane capacity and control; runways — their foundation and pavement; planting of unpaved areas; night lighting; terminal building and control tower; and utilities.

Important decisions were made in all of these phases when the Friendship International Airport was designed and built. Here are the engineers' decisions and some of the reasons why they made them:

• **Clear site, lots of land**—The $15,000,000 Friendship airport (opened last spring) is spotted about nine miles south of Baltimore. Driving time to the city's center is about 25 min. This will be cut to 15 min when a non-stop, four-lane highway is completed this fall.

Paramount reason for selection of the plateau-like site is that it is fog-free most of the year. Other significant advantages are: Approaches are entirely free of obstructions; soil is conducive to economical construction; and drainage is easy.

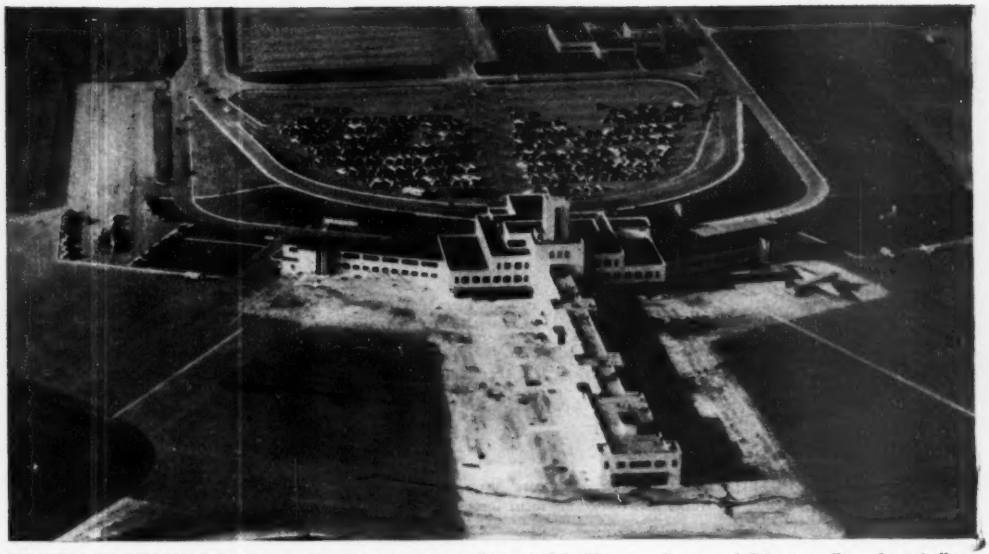
The airport spreads over 3,200 acres. This is enough land to control plane approaches and benefit from increased value built into the airport. Where land cost is low, airport men will do well to buy enough land in the beginning to anticipate these developments, according to Maj. Gen. Donald H. Connolly, (USA ret) who heads the Department of Aviation. He says that it costs just as much to acquire the necessary air rights as it does to buy land outright at the start.

Increased land values are a potential source of revenue to airports, he believes. Friendship has been planned for ten land uses: More than 876 acres for rental to business firms with aviation or related manufacturing interests; other areas for landing, taxi and ramp (716 acres), future development (641 acres) and non-rentable (793 acres).

• **Bringing planes down**—The engineers took pains to anticipate future requirements in controlling flight-approach areas over private property. These areas are zoned for a minimum 50 to 1 plane glide-in angle on all runways. This means that a plane can safely approach a runway by dropping 10 ft in 500 ft—a very gradual descent.

When Friendship was designed, the Civil Aeronautics Administration required only 40 to 1 approach zones for instrument landings and 30 to 1 for non-instrument. CAA now calls for 50 to 1 glide-in zones for all runways.

The instrument-landing system (ILS), now in use, is satisfactory for experienced commercial pilots. Military pilots, however, are better "talked down" by ground control approach (GCA). This system is being installed. When completed, Friendship will



HEART AND BRAIN of the airport, the control-tower-topped terminal building can be expanded horizontally and vertically as may be required in the future to meet growing air travel demands.

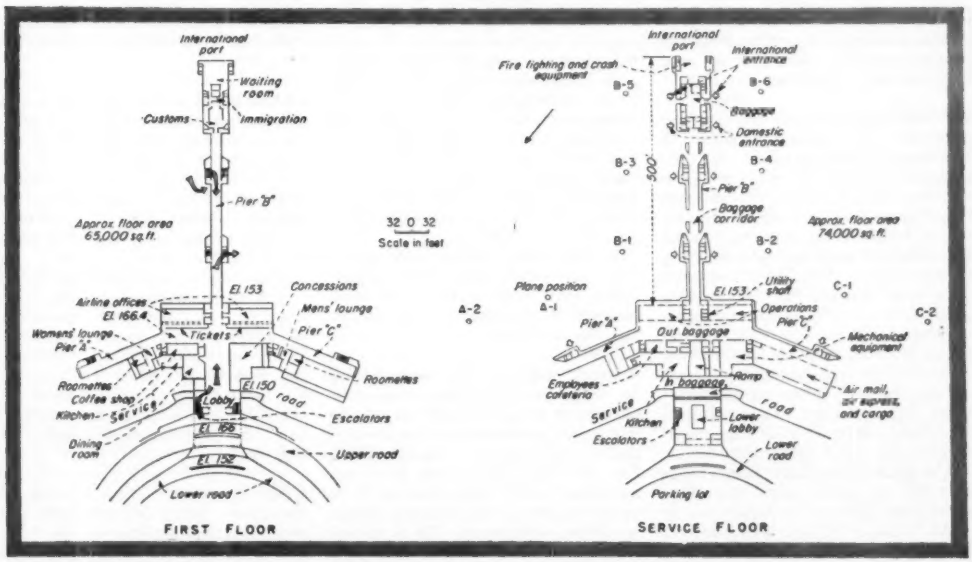
have all the latest aids for aerial navigation.

The airport can handle 200 landings and takeoffs per day with an hourly peak of 40. At present there are 62 scheduled daily flights.

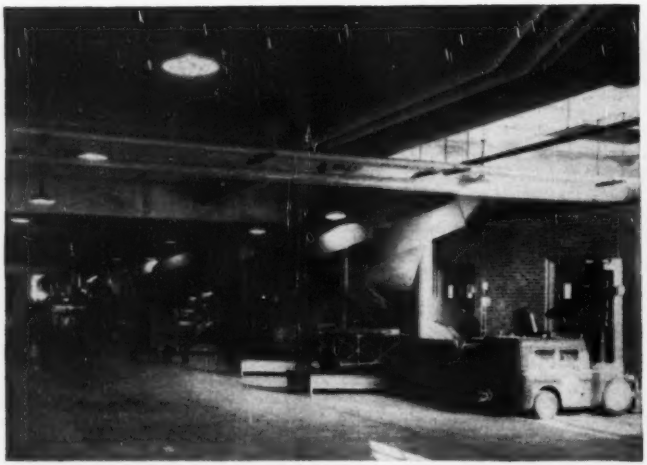
Karl Clarke, the airport manager, calls attention to the fact that plane-passenger capacity is increasing. This bears on design of terminal facilities because more passengers are carried with the same flying schedules.

• **Runways**—The instrument runway's length is 9,450 ft with a width of 200 ft. Its pavement can be extended to 10,000 ft on an already graded area. The other runways are about 6,500 ft and 6,200 ft long. Space is available for three more runways parallel to existing ones.

These runways are unusually long. Up to the present, Engineering Project Manager B. Everett Beavin, Sr.



THE TERMINAL BUILDING has two levels: The upper handles passenger traffic and personal services (note "roomettes" for overnight accommodation); the lower one is for baggage, air cargo and employee services.



PASSENGER BAGGAGE SLIDES from airline counters to lower level on helical chutes. Here it's sorted, placed on trucks and carried in them through interior roadways directly to outgoing planes.

BAGGAGE TRUCKS and trailers enter service corridors (under piers) through hand-controlled air-operated swing doors.

says the tendency has been to reduce plane-stopping distance by reversing propellers and limited braking. But small jets and jet-driven transports are rapidly coming into the picture. These speedy planes can land safely at Friendship because of the long runways.

Upper limit for runway lengths should be 10,000 ft, according to Beavin. Plane designers in the future should be compelled to design their planes to this maximum length, he believes. The reasons: Land for greater extensions is not available at existing airports. And cost of very long runways is prohibitive.

• **Wheel loads**—Runway and taxiway pavements are another example of look-ahead planning: They are designed for 125-psi tire pressure. Limited test data, however, indicate that they'll stand 200 or more psi without risk of failure. This estimate is based on a Marshall scale for stability rating of more than 1,000. Military airports have been designed for 500 M-s-f-s. (The Army has just raised its requirements to 1,000 M-s-f-s). The Marshall rating gives an arbitrary number for estimating pavement strength.

Plane loads are increasing but wheel loads are decreasing because of dual and dual-tandem wheels. This trend, however, promises to be reversed.

Tire pressures on future planes probably will be greatly increased. This stems from the race for higher speeds —and breaking of the sonic barrier. Very thin wings—instead of the conventional bulging rain-drop section—carry supersonic planes. Large diameter tires just won't fold-fit into slim air-foil sections for retraction. This means that diameters and tread width must be decreased and tire pressures increased to carry equal total loads.

Here's where we stand: Constellations now carry 80 psi on main landing gear; DC-6's 100 psi. Jet transports probably will have considerably higher tire pressures. Friendship—on the basis of present knowledge—will be able to accept them without pavement strengthening.

• **Support for runways**—Soil is sandy, with a PRA classification of A-1. But in its undisturbed state, it is permeated with clay lenses varying from 20 ft square to several acres in extent.

These lenses interfere with downward percolation of groundwater. Small ones and many large lenses were cleaned out, the resulting holes being packed with stable material.

Largest lenses, too big to take out, were perforated with power augers. Holes were filled with porous sand to facilitate drainage from surface to very dry sand below.

• **Strong subgrade**—To avoid having to vary pavement thickness with changes in subgrade conditions, foundation and subbase were "super-compacted" with on-site materials (ENR Oct 16 1947 p 98). This built tremendous strength into subgrade. Tests indicated that a 3-in. wearing course would be satisfactory. These indications were not followed because of uncertainties as to wheel-load distribution and frost effect over a period of years. (Runway pavements require about 25% less strength in the middle than at ends. Planes are airborne in mid-sections and vibration is less. Worst damage occurs at ends where planes "rev" up. Vibration is tremendous at these points.)

About 60% of aggregate in bases courses was salvage, accumulated in first-grading-contract stockpiles. Upper courses were entirely of imported material, sand and stone being as tough as possible to resist weathering, crushing and scuffing. All bituminous concrete was hot-mixed in three on-the-site plants.

• **Flexible pavement**—Runways and taxiways are surfaced with 10-in. bituminous concrete. It's in four layers: Two base are 3.5 in. thick; two surface are 1.5 in. Layers were put down with a tack coat—0.1 gal per sq yd—between them. This counteracted dust and weathering. When this pavement was cut through recently, all courses came up as a solid chunk.

The 10-in. pavement cost about $3 a sq yd. Without supercompaction of foundation, it would have been 17-in. thick plus additional subbase and cost $6 per yd at 1947 prices. For 800,000 sq yd the saving of $3 per yd is attributed to supercompaction and salvage of aggregate by Beavin.

• **New type of turf**—Poor top soil on abandoned farms characterized the site. This meant about 1.5 sq miles had to be planted and tied down against wind and water erosion.

Planting was in two classes: High-

PLANE LANDINGS, takeoffs and emergencies are supervised from the 115-ft-high control tower. All orders to planes are automatically recorded. Night lighting is operated from a board that is facsimile of the runways.

grade turf parallel to runways and lighter grass in outer areas. Available topsoil was spread along runways. It was seeded to give a tough easy-to-maintain turf. (Pilots choose turf for belly landings).

Covered with less desirable soil, outer areas were planted with a new and improved seed: African Weeping Love Grass. Its seeds are small. About 2 to 3 lb per acre over a light spread of lime and fertilizer on sand and clay or clay alone produce a luxuriant growth. It is effective in one season, sticks to steep slopes, costs about $1.50 per lb.

The African grass grows 15-18 in. high and droops over. Outer areas, where it's used, are never mowed. If there's a fire, all that's necessary is to sprinkle some seed. Grass comes right up again. It's hardy—the 1949 drought did not damage it. But it has one disadvantage: Dropping its seed in the fall, it must be planted in the spring.

• **Like daylight**—Runways are illuminated by two-direction lamps 200-ft apart on each side of the runways. These lights are white except on the first 1,500 ft of each runways. There they are amber colored to indicate the first section to incoming planes.

Mr. Beavin now believes that these lights probably should be 100-ft apart for the first 1,500 ft of the instrument-approach runway. Landing-light spacing is being explored with CAA and other airport authorities.

All runways have high-intensity lighting (20,000 beam candlepower per light or better).

Friendship's lights have 52,000 cp. They're adjustable in brightness—0.3% to full intensity in five steps. Lowest step is utilized to reduce glare on bright nights; use of low intensity also greatly prolongs lamp life. (The manufacturer claims 3,000,000 hr at 0.3% intensity).

High-intensity approach lighting is now being installed on the east-west runway by CAA. This extends outward 3,000 ft from the runway's landing end.

All lights are remote-controlled—on-and-off and intensity—from the tower. A facsimile board on the operating panel carries signal lights equivalent to those on all runways.

Taxiway-runway intersections are marked with one or two blue-neon letters (EE, DC, EW, etc) that are used exactly as street signs. About two feet high, they tell the pilot where to turn off after getting tower instructions.

• **Terminal is tops**—The terminal building is pleasing, efficient and uncluttered, the happy result of a lot of hard thought and existing-terminal study. Traffic is divided: Passengers use the upper level; baggage, freight and services the lower. (See plan).

Outgoing passengers who come to the port in their own autos park them in the 1,400-car no-charge paved lot. Entering from the lower level, they rise 16 ft to the spacious lobby on escalators, walk to airline counters to right and left beyond the lobby. Here they pick up tickets and check baggage, then pass to any one of three piers for boarding their plane.

Outgoing passengers who are discharged from taxis on the upper roadway walk through the lobby to the airline counters, and then proceed to their plane location.

At present, outgoing passengers must descend a staircase from the pier to ground level, then climb a portable stairway into the plane. This will be changed soon by installation of a movable bridge. An innovation in passenger handling, this bridge will extend directly from upper level to plane door, with a slight upward slope from the plane.

Arriving passengers climb pier stairways to the upper level, pass through piers and lobby and descend to the lower level, also on escalators. (The climbing will be eliminated by the movable bridge). Their baggage is brought to them in the lower lobby. At its exit taxis and limousines are available. The wait for baggage can be held to two to five minutes, if airlines speed handling.

Checked-in baggage behind the airline counters slides down helical chutes to the lower level, for sorting and trucking to planes. Trucks travel beneath piers to plane-loading positions. This gives maximum weather protection and channelizes service traffic. Entrance and exit to the freight corridor at landing positions is by hand-controlled air-operated swing doors. Electric eyes close doors after truck passage.

All utilities serving the piers are suspended from the freight-corridor ceiling, facilitating repair and expansion.

• **Make it pay**—"Terminal buildings should be self-liquidating." To make them so, Beavin suggests two essentials: Develop concessions to produce non-aviation revenue; and expose all passengers to concession appeal. He says that terminals should feature every type of service and product for which there is a reasonable public demand.

Some of the services provided at Friendship: Dining room, cocktail lounge, coffee shop, merchandise mart, game room and barber shop.

Display cases that bring in $10,000 annually are rented at $550 a year. There are 26 of them now scattered through the spacious lobby. About 10 to 20 units will be added.

Roomettes for 10 women and 10 men are on the first and second floors. They consist of separate bedrooms and toilet-and-shower rooms on opposite sides of a central corridor. Rentals are for both or singly: Charge for both facilities is $3 per day or 75¢ for the shower room.

Roomettes were included in the design with some hesitancy, Beavin states. But Clarke declares that many

THE MEN AT FRIENDSHIP INTERNATIONAL AIRPORT

Friendship International is the newer of two airports operated by Baltimore's Department of Aviation. The department is headed by Donald H. Connolly, major general (ret) and formerly commanding general, Persian Gulf Command, World War II. His assistant is C. F. Grigg.

The airport is managed directly by Karl Clarke, who reports to Gen. Connolly.

Project manager for Whitman Requardt-Greiner Co. and Associates, consulting engineers who designed Friendship Airport, is B. Everett Beavin, Sr.

more roomettes could be rented out as airline activities expand.

All concessions are under one management. The Department of Aviation receives a percentage of gross income.

• **Terminal's highpoints**—The terminal building is of reinforced concrete and steel. It has ample window area, southern exposures having low-heat-transmission glass.

Numerous public-address loud speakers are located throughout the terminal. There are enough of them so that the noise level is low. Announcements and paging can be heard distinctly.

One or two floors can be added above the present terminal at certain sections. Upward expansion is planned to go hand-in-hand with operating needs.

The terminal can also stretch outward horizontally. Piers A and C can be extended if plane traffic demands additional ramp space. Most airports cannot expand their passenger-loading facilities. (Note: About 158-ft frontage is needed for today's big plane).

• **Gold on the roof**—The observation platform has handled 120,000 people at ten cents each in three months. Over 1.2 million people visited the airport in the same interval. The ratio: One out of ten persons makes use of the observation platform.

Observation from the platform (above Pier B) is through a 320-deg sector. This makes it possible to see planes landing and taking-off a real attraction for spectators. They may also look directly down on passengers boarding and leaving planes.

The observation platform deserves the best in planning thought, Beavin thinks. "A good source of revenue and it should not be neglected."

• **Conduit shaft**—A 6 x 10-ft utility shaft extends from the freight corridor up through terminal building to the control tower. Steel plates cover the shaft at each floor level. These make it possible to work safely at each floor as well as guard against spread of fire.

Designed for flexibility, the shaft gives unrestricted space for new or unthought-of pipes and conduits. For experimental operation and use, pipes or conduits may be threaded in easily after burning holes in steel plates.

Low-tension wires—600 of them—are now located in the shaft. And this is just the beginning.

• **Control tower**—Perched 115 ft high, the control tower's sight lines permit observation of all runways and taxiways. This will hold even after hangars are built.

The tower has both high (HF) and very-high-frequency (VHF) radio communication with planes. All military and commercial planes have VHF; HF is kept only for private planes. Within a few years, all inflight contact will be VHF.

Flight orders are automatically recorded in the tower. Recording equipment is extremely sensitive: It starts when the microphone is picked up and catches all words. This is important in an emergency, particularly if it should be necessary at some later time to determine exactly what action was taken.

• **Service pits**—They are completely equipped: An air-conditioning tube for planes; 110-v ac plug-in current for ramp lighting; 28.5-v dc plug-in for starting plane motors; cold-water supply; sewer (unused so far) and stormwater connections; ducts to terminal for future telephone hookup to planes; and gasoline outlets (future).

Service pits are grounded against static and differential-potential electricity. (It's hazardous during gassing up). Grounding is by copper conduits extending under the terminal. Here conduits connect to copper rods driven into wet soil and to copper mats.

• **Utilities**—Long-range planning is apparent in utility design and location. Here are some facts about electric cables, water mains, telephone conduits, sewers and gasoline pipelines.

Electric power is brought in from two directions for reliability and expansion. It is purchased at 33,000 v and distributed through the airport at 13,000 v and 440 v.

Electric lines can be extended under runways and taxiways without excavating pavement. Empty ducts for cables are under all four sides of every intersection.

Water pipes and conduits for telephone wires are under intersections, also on four sides. They are sealed off for future use.

Pipes close to runway surfaces were encased with a soil-cement mixture before compaction of the subgrade. This was required to prevent damage from 200-ton rollers used in compaction and heavy aircraft. Using three bags per cubic yard and soil adjacent to the trench, encasement cost $8 a yd. Concrete cradle would have cost $30 a yd, according to Mr. Beavin.

Sewage is discharged by a gravity outfall four miles to Baltimore County's system. On a 0.22% gradient, the 15-in. vitrified-clay pipe will carry 1.6 mgd. ample capacity for future growth.

High-octane gasoline is stored underground about 1,100 ft from the terminal building. Brought in by tank trucks, it's drained into six 20,000-gal tanks. It's pumped out through filters to tender trucks for planeside loading.

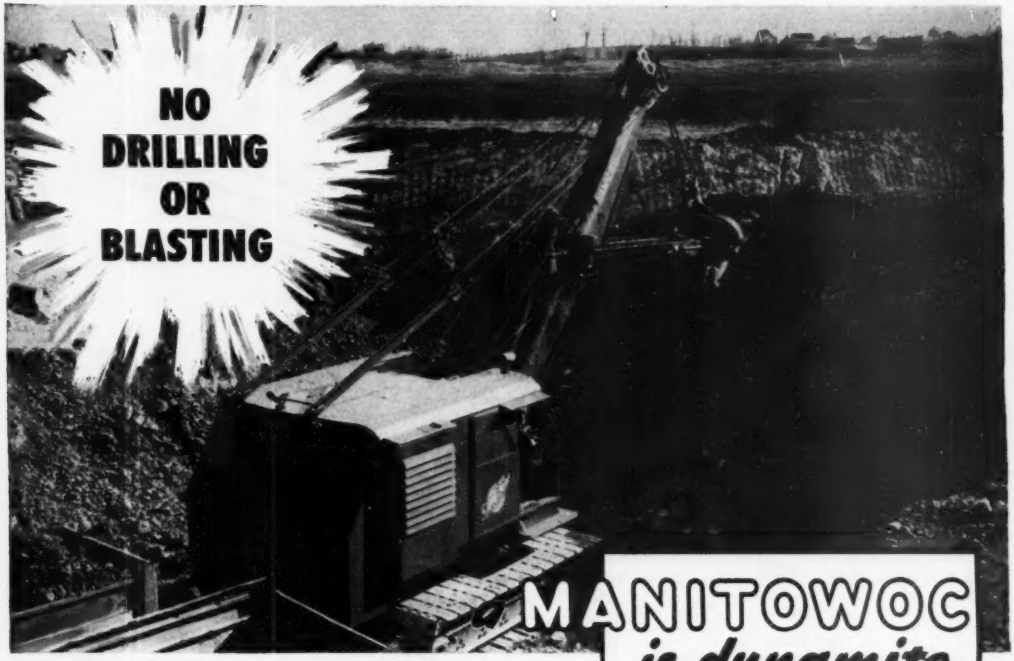
Although not utilized at present, gasoline piping is designed for pumping fuel directly into planes. It will handle up to 500 gpm, a rate that's probably adequate to serve jets. Airports having gasoline pipelines that can now handle only up to 200-gpm flow may give thought to future hydraulic demands of jet-powered aircraft, Beavin says.

Space, 1.5 miles from the terminal, is reserved for a ten-acre gasoline-storage farm. This area is next to the Pennsylvania RR and near an oil and gasoline pipeline.

• **Stormwater exit velocity**—Culverts under the runways (500 ft long) are designed to prevent destructive, eroding exit velocities. Such velocities undermine wingwalls and embankments, particularly at skew locations. This is done by flattening out the lower end to produce a hydraulic jump that fills the pipe. Exit velocity (about 5 fps because the sand erodes at 4-5 fps) then equals that at entrance to the culvert.

All field drainage is handled by inlets discharging to storm drains. In some cases, between runways and outside of usable landing areas, there are paved and unpaved ditches.

Preventing excessive exit velocities is a problem that hasn't been fully recognized, Beavin points out. He says that flow of water in culverts is often speeded up from 5 to 25 fps. This creates a destructive force that's hard to handle.



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TYSCRU SIZE	PUBLISHED SAFE LOAD	REPORT OF ULTIMATE LOAD Test No. 1	Test No. 2
½" Dia.	6000	9,490 lbs.	10,590 lbs.
¾" Dia.	12000	19,720 lbs.	20,570 lbs.
1" Dia. 2 Strut	18000	27,580 lbs.	27,820 lbs.
1" Dia. 4 Strut	24000	37,930 lbs.	36,890 lbs.
1¼" Dia. 4 Strut	30000	55,270 lbs.	56,790 lbs.

*Assistant Professor of Civil Engineering

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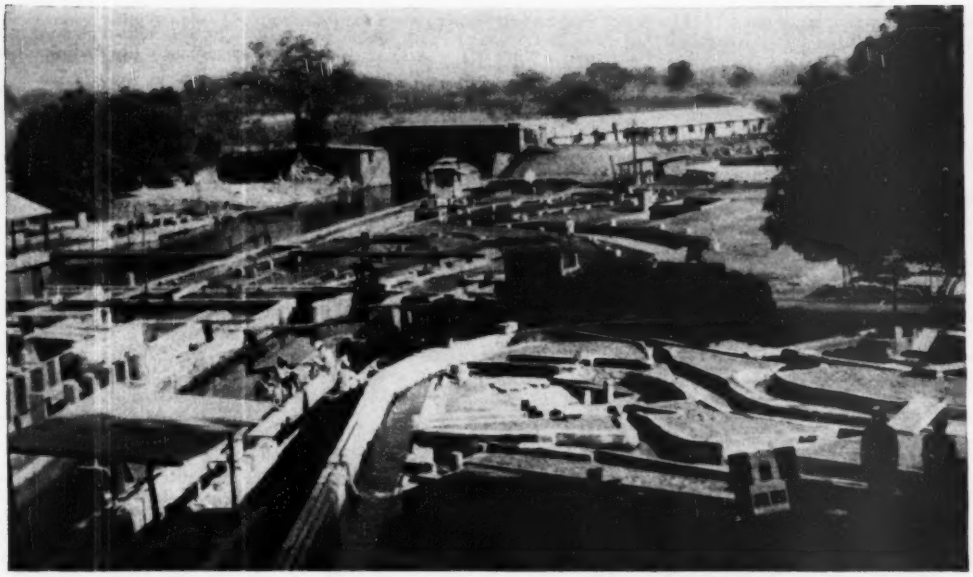


MANY WATER PROJECTS proposed for India are now under study in a hydraulic laboratory which is spread out over 30 acres below the water-supply dam for Poona.

Letter from INDIA—

Bombay—the Gateway

INDIA, an engineering visitor will quickly infer, is on the threshold of great technical developments. Indian engineers tell him so repeatedly, with frequent reference to projects already under way or planned.

Interviews with top industrialists bring more guarded answers, for they sense more keenly the lack of foreign exchange — principally dollars — to meet the costs of India's hopes for modernization and self-sufficiency. Yet even they reflect a feeling that India is destined to get such things as more irrigated land, more industrial power, improved sanitation and better education for its workers and farmers.

Whether these attitudes are merely the result of dreamy optimism, born of pride in India's newly-acquired independence, or are based on firm resolves to overcome whatever obstacles may arise—political, economic or technical—is not to be decided after a mere week's stay in the Bombay area. At present I can only attest to the great hospitality of Indian engineers and to the eagerness with which they show their plans and designs for the development of their country. How these plans are faring—in the stages of approval, financing and actual construction—will be recorded as fully as three more weeks of travel and inquiry can reveal.

• **Good start**—It is fitting that an engineering study tour of India should begin in Bombay.

Since the first Europeans came to this great peninsular sub-continent of Asia (the Portugese in 1530 and the English two centuries later) Bombay has been known as the Gateway to India. A massive stone "gateway" monument proclaims the fact on the harbor front. And Bombay residents are not apt to permit a visitor to forget it. Even the air age has recognized Bombay as a gateway, they maintain, pointing to Santa Cruz Airport—large by modern standards and destined to be larger, including ultra modern buildings. They will admit that Karachi was on the way to challenging Bombay's air supremacy, but Karachi is now in Pakistan—thus no longer a competitor.

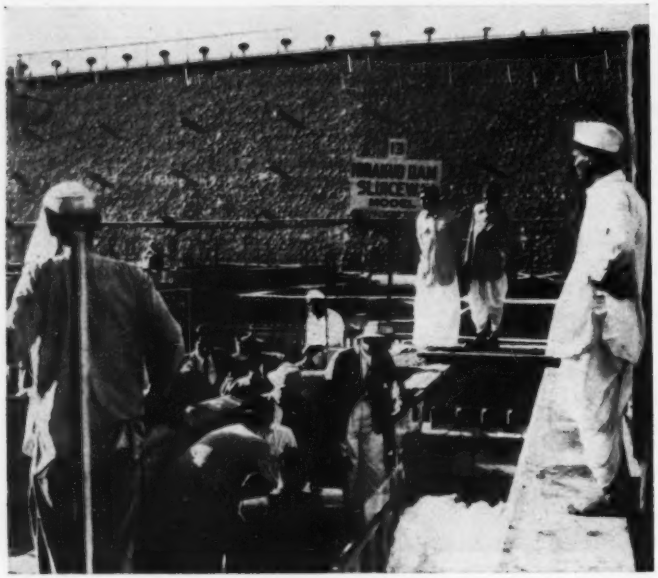
EDITOR IN INDIA

Waldo G. Bowman, Editor of Engineering News-Record, is now in India as one of the U. S. delegates to the meeting of the International Association for Hydraulic Research in Bombay and the gatherings to be held in New Delhi in connection with the sectional meeting of the World Power Conference. (ENR Jan. 11, p. 26)

The accompanying report, written from Bombay at the close of the hydraulic research sessions, is the first of several reports that Mr. Bowman expects to send from India and later from Europe.

• **Plenty of work**—Engineering-wise, the Bombay gateway opens on a number of things of significance. For example, the city's population, which was 1½ million before the war is now 3½ million, requiring a doubling of the present 100-mgd water supply by a new mountain reservoir and 45 miles of tunnels and pipelines. Then, 500,000 of the population was added by refugees from Pakistan this past year, and camp housing has had to be provided for them; some of it consists of substantial masonry housing, better than many of the U. S. speculative developments, but lacking any plumbing or lighting whatever.

Bombay, too, is the headquarters of Tata Industries, the large, progressive and beneficent enterprise which has provided the core of industrial India for 75 years during which time it has carried out many millions of dol-



DELEGATES to the Bombay meeting of the International Association for Hydraulic Research were given an opportunity to study river models under test in Poona laboratory.

lars worth of construction. It owns hydro plants, textile and steel mills, chemical factories, coal mines and Air India, the country's largest domestic and only international airline.

• **Convention city**—Bombay recently had also another claim on engineering attention when it played host to 150 delegates from a dozen foreign countries attending the fourth meeting of the International Association for Hydraulic Research (IAHR).

This is the first of a series of international association meetings—the rest were held in New Delhi during succeeding week—dealing with various phases of water conservation and development. Since India's future rests so heavily on better utilization of its water resources, Indian engineers are attending the conferences in great numbers, and their proceedings are front page news. And since better water utilization starts with hydraulic research the IAHR sessions were the logical ones with which to begin the conferences.

Four subjects comprised the program, and a total of 27 papers were submitted for discussion. They related to (1) design of lined canals; (2) design of headworks to exclude solid materials from canals; (3) effect of dams on the regime of rivers; and (4) distribution and control of water and solids in canals. For the most part they described existing installation or model studies upon which research has been carried out over the past half dozen years and are not susceptible of brief review. They will be available in full in the association's published proceedings.

Prof. Lorenz G. Straub of the University of Minnesota is president of the IAHR, and was reelected for another three-year term. The next meeting will be held in 1953 at the University of Minnesota where Prof. Straub is director of the St. Anthony Falls Hydraulic Laboratory.

• **Take to the hills**—Following the Bombay sessions a two-day inspection trip into the hills of the Deccan Plateau, whose 2,000-ft escarpment rises only about 25 miles east of the city, gave substance to some of the things that the technical papers had described. Visits were made to the Central Waterpower, Irrigation and Navigation Research Station at Poona, to the tunnels and damsites of the Bombay water supply and to one of the hydro stations of the Tata organization.

• **Hydraulic laboratory**—Located directly below the dam that impounds Poona's water supply, the national hydraulic station now covers 30 acres, and a further 100 acres is under development. Fourteen models of river situations are currently under study. Meticulously constructed in concrete, the models reflect the abundance of cheap labor that is available. The mechanical equipment is not of such high caliber, but has proved adequate for the solution of the wide variety of problems that India's rivers present. One of the most interesting studies relates to erosion and bed protection for the ski-jump spillway to be used at Hirakud Dam on the Mahanady River—one of the three largest projects that are under way in India, the other two being the Bhakra Dam on the Sutlej River and the series of dams on the Damodar River. The dissipation of energy from the jets of water is accomplished by sills at the toe of the spillway so that the bed below is little affected by scour when the falling water strikes it. The eddy currents at the toe of the dam are also rendered extremely weak and harmless.

PORTAL of one of the tunnels, aggregating nearly five miles in length, that will bring water from Vaitarna Dam to Tansa Lake, main source of Bombay's present supply.

• **Bombay water supply**—The present water supply of Bombay comes from a hill reservoir known as Tansa Lake 40 miles east of the city. Two 72-in. steel pipelines conduct the water into the city. To augment this source the city has gone 5 miles farther up in the hills on another river, the Vaitarna, to construct a new reservoir. This will be joined with Tansa Lake by 5 miles of 10-ft horseshoe-section tunnel, and a new 96-in. 45-mile steel pipeline will be built to the city. Treatment will be by chlorination only, as at present. The cost of the dam is set at $14,000,000, the tunneds at $6,000,000 and the pipeline at $20,000,000. These are approximately four times prewar costs, according to N. V. Modak, chief engineer for the city on the project.

Vaitarna Dam will be a concrete gravity section structure 261 ft high and 1,820 ft long. An overflow spillway equipped with drum gates will pass 200,000 cusecs. The useful storage in the reservoir will be 46,000 million gallons. It is interesting to note that the average rainfall over the 174 sq mi catchment area above the dam is 110 in. per year.

At present the dam site is cleared, excavation is underway at the left abutment and the contractor, Hindustan Construction Co., is assembling its modern concreting plant and placing foundations for the two cableways that will be used.

• **Tunnel work**—Tunnel construction is actively underway through a hard basalt that requires no timbering. Because of the small section, no drilling jumbo is being used, the workmen operating from platforms that they erect and then drag back when shots are fired. There are actually three tunnels connected by 120-in. pipelines on bridges across two streams. To achieve additional working faces and cut down the length of haul, two shafts have been sunk in the two longer of the tunnels which each approximate 9,000 ft. Something over one-half of the tunnel driving has been completed in 1½ years of work. The maximum progress has been 1,000 ft per month.

This good progress was obtained after a shift to "coromant" drill bits, a Swedish product in which 5-ft rods are tipped with tungsten carbide to which a small percentage of cobalt has been added as a binding medium. The tips are inserted in a slot which is forged from the rod end. Each rod lasts for about 800 hours of drilling during which time 3 or 4 sharpenings are required. All of the tunnel work is of modern type except that a maximum of manual labor is employed. As a result the tunnel is pretty crowded at times.

The pipeline will be fabricated in a new factory on the outskirts of Bombay, which is now about 80% complete. The pipe will be of ⅜ and ½-in. plate according to the pressures in the locality, adjusted to the working head available at the end of the dry season when the reservoir is at maximum drawdown. Expansion joints will be provided every 1,008 ft. A total of 29 supports will be used in each section, the middle three fixed and the remainder on rollers. The pipe and the ring girders at the supports will be welded, and all three welds tested by X-ray equipment both in the shop and the field.

According to present plans, Bombay will get its new water supply in 1954. Unfortunately it needs it now, so that water rationing will become increasingly necessary.

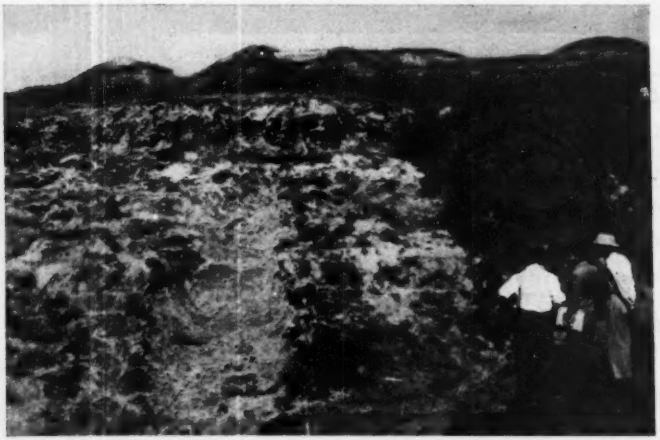
• **Tata Hydro**—The visit to the Tata Hydro Electric Works at Khopoli, afforded an insight into the history and philosophy of India's greatest industrial organization. Except for the several hydro plants, which are jointly owned with the Electric Bond and Share Co., Tata is an Indian concern. Stemming from a textile mill opened in about 1875, it has grown to encompass all kinds of industry, and has pioneered in good employee relations, progressive methods and especially on modern construction. It employs more than 125,000 persons in its various enterprises, and is probably responsible for bringing higher standards of living to more Indians than any other organizations, private or governmental.

By no means all of Tata's contributions have been solely for the benefit of its employees. The founder, Jamshedji N. Tata, was a great philanthropist and set up many trust funds for the betterment of India's population generally. A large proportion of Tata's profits still go into this kind of work, and the funds support schools, scientific research, hospitals and health studies—and one trust operates like an Indian Red Cross in relieving distress caused by natural disasters.

• **Nationalization? Not Tata**—There is much talk in India of nationalization of industry on the British model. Responsible government officials espouse the idea in public speeches. But none of them ever uses Tata as an example where nationalization would offer advantages.

Even the socialists, who are numerous and noisy in attacking concentrations of economic power, go slow on Tata. Its policies have already produced through private enterprise many of the results that the socialists are offering for some indefinite time in the future.

Tata has demonstrated one kind of a pattern that India might follow to its advantage in seeking ways to improve the standards of its people. Many Indians who see the inevitability of greater governmental control of business and of government construction of such things as multi-purpose river developments, say that Tata will be the first to come up with considered and sympathetic suggestions geared to the nation's advantage rather than to Tata's. If the welfare-state enthusiasts in Washington should welcome sugestions and heed the advice of General Motors or du Pont there would be an analagous situation in the U. S. It is a bright spot on Indian's somewhat cloudy horizon.



CLEARING and some grading has been done at the site of Vaitarna Dam, a $14,000,000 structure to supplement the water supply of Bombay.

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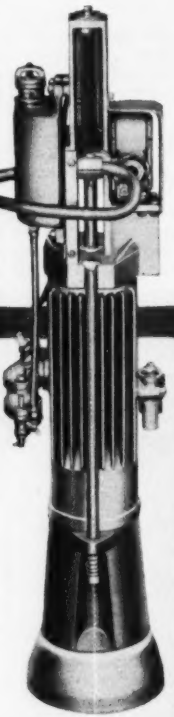
*Tests certified by government agencies.

for soil compaction close to walls, culverts, and abutments —in trenches, ditches



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BEFORE. Palmetto Street, often crowded with traffic, was too narrow. Some trees had to be taken up for the widening.

AFTER. Appearance of the street is improved by full-width pavement, intersection corner pedestrian-protecting curbs.

Wholesale street improvements make city look better, motorists feel better

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Resident Engineer
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Harrisburg, Pa.

GOOD CITY PAVEMENTS—one of a city's most appreciated public works—cost a lot of money today. This is particularly true if a city chooses to improve all its streets at one blow.

But that's exactly what Daytona Beach, one of Florida's fastest growing communities, has done. A progressive City Commission took a hard look at its 25-yr old streets after completion of an extensive sewer system. They decided to invest $2,500,000 in city's future. They now have new, wide, smooth streets for the whole city.

• **Breakdown of project**—Improvements were made on about 70 miles of streets. The work consisted of:

1. Storm sewers. In poorly drained areas of the city almost 40,300 lf of pipe was put down. Sizes ranged from 15 to 42 in. and depth from 3 to 16 ft. Pipe was either reinforced concrete or fully asphalt-coated corrugated-metal.

Long storm water inlets are centered on most of the corner curbs, to draw rain water off intersections.

2. High-type pavement. Six blocks in the business district were completely rebuilt. Paved parking lanes are on both side of these streets (see cross section).

3. Resurfacing. About 37 miles of disintegrated, bumpy or irregular pavement were resurfaced. A leveling layer was generally put down before the surface course was placed.

4. Widening and rebuilding. A number of residential streets, too narrow to accommodate normal traffic, were widened and then rebuilt for the full width. In some cases parking lanes line narrow streets.

Traffic counts and studies were made to determine where volume of vehicle movement warranted widening of streets.

5. More than 23 miles of new pavements were built on lightly traveled residential streets. These pavements are 7-in. base, stabilized with lime rock or marl, single bituminous surface-treatment, and sheet-asphalt wearing surface. Surface treatment was 0.45 gal of semi-solid asphalt and 0.55 cu yd of hard-rock aggregate per sq yd. Aggregate size was 100% passing one-inch screen and 0 to 5% passing 0.375 in.

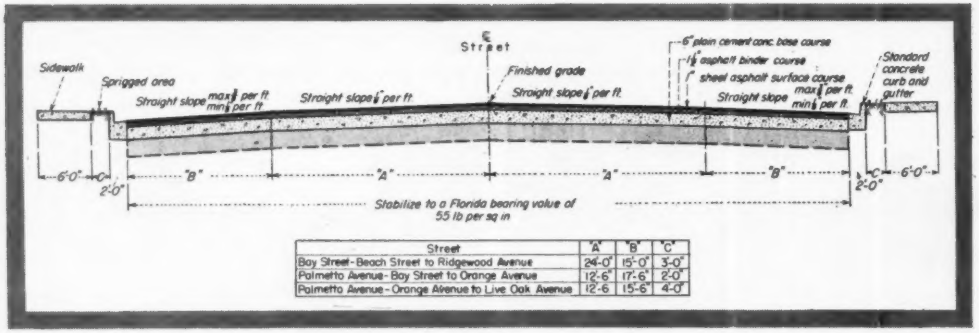
6. Several new streets, previously unopened, were paved with the residential design.

7. Quarter-circle curbing—with 25 to 55-ft radii to ease auto turning—was built on the four corners of many intersections. This was done on heavily traveled streets where sidewalks previously met pavement at gutter level. The curbing keeps automobiles from cutting corners and striking pedestrians.

• **Doing the job**—Pre-paving operations were done by two crews. The first crew adjusted manholes, inlets and valve boxes to the proposed finished grade. The following crew sealed old-pavement cracks and smoothed off

BEFORE. Brick pavements, 25-yrs old, were rough and poorly drained. Corner cutting was a threat to pedestrians.

AFTER. Sheet-asphalt wearing surface improved riding. Long-radius curbs limit turning areas. Inlets take off rain water.



Street	"A"	"B"	"C"
Bay Street - Beach Street to Ridgewood Avenue	24-0"	15'-0"	3'-0"
Palmetto Avenue - Bay Street to Orange Avenue	12'-6"	17'-6"	2'-0"
Palmetto Avenue - Orange Avenue to Live Oak Avenue	12'-6	15'-6"	4'-0"

PAVEMENTS in heavily traveled business sections have stabilized subbase, concrete foundations, asphalt binder course and sheet-asphalt wearing surface. Cross section has straight slopes between quarter-points.

courses. The leveling course consisted of a granular asphaltic mixture containing a good percentage of 0.25-in. stone. This course provided excellent bond for the wearing course. It was brought to a uniform crown with a 12-ft blade on a motorized grader.

All streets were surfaced with sheet asphalt. The binder for the sheet asphalt was Trinidad Lake asphalt. Its specified penetration (60 to 70) was held in the low sixties.

Because local sands were too fine to give a satisfactory sheet asphalt, the sand and fine broken-stone screenings were imported from western Florida. The other aggregates were obtained locally.

Placed at 325 to 375 deg F, surface courses varied from ¾ to 2½ in. thick. Their stability, as determined by the Hubbard-Field test, was 1,800 to 1,900 lbs. The HF test consists of placing a highly compressed sample of paving mixture, as a cylindrical briquette, in a testing mold. Pressure is gradually applied with a plunger until sample yields. A reading at this point gives stability and an indication of the pavement's reaction to impact of future traffic.

Top courses were placed with two paving machines. They not only laid the material fast but, with mechanical screeds, they insured a smooth-riding surface.

At the peak of paving operations, sheet asphalt was mixed into two hot-mix plants, both of the pug-mill type, with capacities of 300 and 600 tons per day. Output of the smaller plant was earmarked exclusively for leveling work.

The contract stipulated that the job was to be complete in 300 calendar days. All work was substantially done in 270 days.

Sequence of construction was carefully planned and controlled to minimize inconvenience to the public. No major work was attempted on main arteries during the November to April tourist season.

• **Financing**—The bond issue for street improvements was authorized by the City Commission in Sept 1949. Quick on the heels of this action, the consulting engineers drew up a preliminary report on the proposed work. This made possible sale of the bonds a few weeks later.

Plans and specifications were then prepared at forced-draft speed, so that the job could be advertised just over a year ago.

(Bonds were sold for 3.25 to 3.75% interest at par value.

The bonds are secured by a first lien upon revenue from a utility tax levied by the city specifically to defray cost of street paving. Also pledged are a tax on gross collections of the city owned water system and total revenue from 590 parking meters in the main business district. These extras attracted the favorable attention of bond buyers.

• **Men in charge**—The successful bidder was a combine of S. B. Brinson, J. Cone and J. D. Manly. Each member of the combine, a contractor in his own right, has specialized in road construction for many years in Florida.

The city engineer, William Leseman, did his part to speed the work along. He coordinated the various city-utility departments and saw to it that they all made adjustments in their facilities, well ahead of construction.

The consulting engineers, Gannett, Fleming, Corddry & Carpenter, Inc. prepared the preliminary report and contract plans and specifications. They also supervised construction.

The project was supervised by GFCC's vice-president, J. D. Carpenter and John Dietz, head of the firm's highway unit. The writer was resident engineer and Walter Peightal was chief inspector.

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New NUMBERING SYSTEM

FOR A305 REINFORCING BARS

A new method of identifying reinforcing bars for size has recently been adopted by the steel industry. In this new system, bars are designated by numbers from 2 to 11. However, the new bars will have the same cross-sectional area as the old bars, so design tables, etc., will not need to be changed. The bar chart below explains the new designations.

CONCRETE REINFORCING STEEL INSTITUTE
38 SOUTH DEARBORN STREET, CHICAGO 3, ILLINOIS

STANDARD A305 REINFORCING BARS

BAR SIZES OLD (INCHES)	BAR SIZES NEW (NUMBERS)	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS — ROUND SECTIONS DIAMETER INCHES	CROSS SECTIONAL AREA - SQ. INCHES	PERIMETER INCHES
1/4	2	.167	.250	.05	.786
3/8	3	.376	.375	.11	1.178
1/2	4	.668	.500	.20	1.571
5/8	5	1.043	.625	.31	1.963
3/4	6	1.502	.750	.44	2.356
7/8	7	2.044	.875	.60	2.749
1	8	2.670	1.000	.79	3.142
1	9	3.400	1.128	1.00	3.544
1 1/8	10	4.303	1.270	1.27	3.990
1 1/4	11	5.313	1.410	1.56	4.430

The new bar designations are based on the number of 1/8 inches included in the nominal diameter of the bar.

The number 2 in the new rounds only. Bars numbered 9, 10 and 11 are round bars and equivalent in weight and nominal cross-sectional area to the old type 1", 1-1/8" and 1-1/4" square bars.

The above weights are adopted as standards by the Institute in 1934 and supersede former practice. These weights have been approved through the U.S. Department of Commerce Simplified Practice Recommendation R 26-50.

NEW BAR NUMBERS

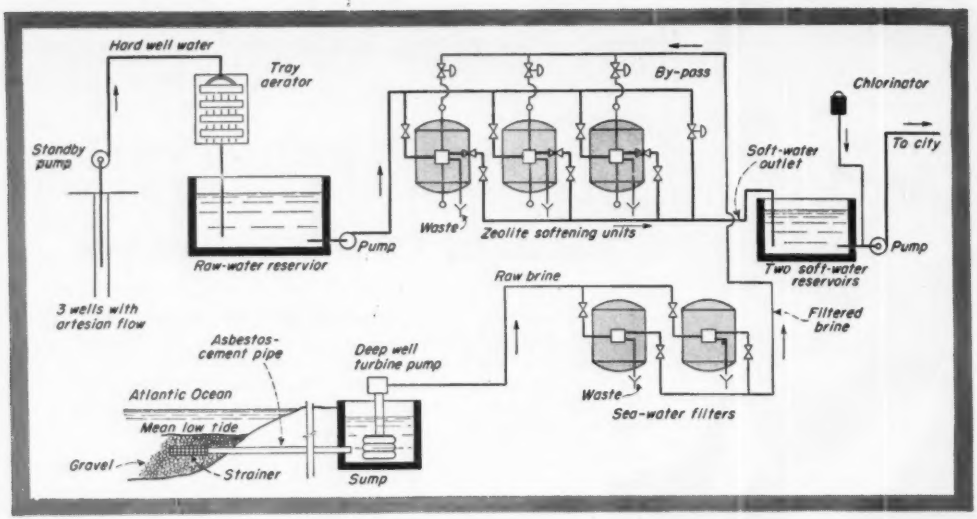
These denote the nominal diameter of the bar in eighths of an inch. Thus, a #3 bar (nominal diameter 3/8") has the same weight per foot as a 3/8" plain round bar. Bars #9, 10, and 11 are an exception to this rule. See details below.

NO MORE SQUARE BARS

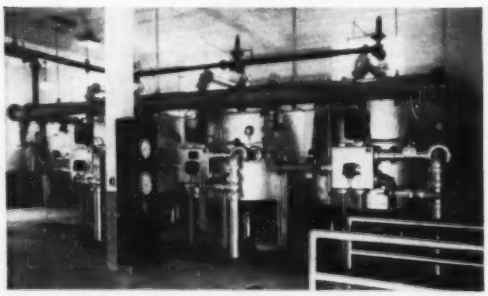
Bars #9, 10, and 11 are round bars equivalent in weight and nominal cross-sectional area to the former 1", 1 1/8", and 1 1/4" square bars.

Write for Your FREE Copy of this New Bar Card

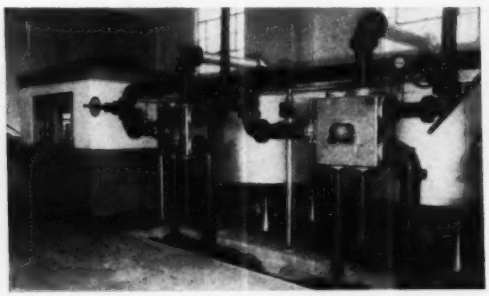
CONCRETE REINFORCING STEEL INSTITUTE • 38 S. Dearborn St., Chicago 3



HYDROGEN SULFIDE in well water is removed by aeration. Softening is accomplished by sodium-zeolite units operating under pressure. Sea-water is then utilized to regenerate softeners.



SOFTENING takes place in three pressure-type units. They give off water with zero hardness. Flow is indicated and recorded.



SEA WATER—for regenerating sodium-zeolite softeners—is filtered before use.

Softening plant has sea-water regeneration, and automatic control, for processing

SEA WATER regenerates sodium-zeolite softeners in the new Jacksonville Beach water plant. Making use of plentiful, free-of-charge ocean water—instead of purchased salt for regeneration—results in considerable operating savings.

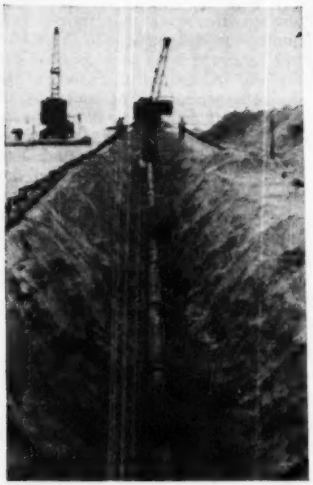
The third plant of its type in Florida, the new 2-mgd facility, is fully automatic in operation and can satisfy a widely varying demand for water. Normal population of the resort is 8,000; the summer peak is about 25,000. The plant is designed to serve until 1965.

• **From wells to city**—Fresh hard water (18 gr per gal expressed as calcium carbonate) for the domestic consumption is drawn from three wells. These flow under artesian pressure but—if the supply is inadequate to the demand—a booster pump starts automatically to make up the deficiency. Control of the booster is by water level in raw-water reservoir.

From the wells, raw water is aerated to remove hydrogen sulfide, a rotten-egg-odor gas. This is done in an aerator containing three slatted trays and a top distributor that has a perforated bottom. Water enters at the top, cascades downward through the trays, leaves at the base, and flows by gravity to storage. Cascading breaks up the water and releases the gas.

Aerated raw water is stored in an underground reservoir. With 0.4 mg capacity, it precludes heavy pumping and excessive drawdown on the wells. Peak demands are drawn from storage while the reservoir is filled at a constant rate that doesn't damage the subsurface supply.

Transfer pumps with suctions to this reservoir force aerated raw water through the sodium-zeolite softeners (10 to 15 psi pressure loss) to soft-water storage. The softeners contain



SEA WATER is drawn from a strainer under the Atlantic Ocean through an asbestos-cement pipe.

styrene-base resin zeolite. Its capacity is 12,000 grains of hardness removal per cu ft between regenerations.

The sodium-zeolite units produce a water with zero hardness. But the plant is designed to turn out 2 mgd with a 4 to 5-gr-per-gal hardness. This is done by bypassing about 25% of the total aerated-raw-water flow around the softeners. Blended with the zero-hardness output this produces a water that is accepted as standard in municipal practice.

Blending is controlled by an automatic hardwater bypass proportioner. This mixes 25% raw water with 75% zero-hardness water at all times irrespective of flow through softeners.

A solution of neutralized poly-phosphate is fed to the final blended soft water for stabilization. This solution prevents corrosion problems in the distribution system. Amount of phosphate added is determined by experiments. (It is about 2 to 5 ppm.)

Blended and stabilized water is stored in two underground reservoirs. After chlorination, it is delivered to the city's distribution system by high-service pumps. The distribution system includes 200,000-gal elevated tank capacity.

• **Regenerant**—Sea water from the Atlantic Ocean flows through a porous well strainer, buried in gravel below mean low tide, to a concrete sump and asbestos-cement pipe. Deep-well turbine pumps in the sump are connected to filters that discharge directly to piping serving the softeners. Operation of these pumps is controlled by master valves on each softener.

It is interesting to note that pumps are piped and valved so that the buried intake strainer can be backwashed.

The two sea-water filters have a 42-in. bed of sand and gravel and are equipped with manually operated hydraulic-type multiport valves. This permits backwashing when pressure loss through filters becomes excessive (about 5 to 10 psi). Sea-water piping, valves and fittings are cast-iron, cement-lined.

Regeneration is accomplished by passage of about 25 gallons of full-strength clear sea water per cu ft of the styrene-base-resin zeolite. Pumping rate is about 150 gpm.

• **Automatic control**—The entire plant is fully automatic in its control and regeneration. Each softener is equipped with a 6-in. "masterminding" hydraulic-pressure multiport valve (Cochrane Hydromatic), driven by a 3-w motor.

The hydraulic-type valve automatically regenerates each unit after its rated softening capacity is exhausted. This is done by a meter and contactor on each softener. When the volume capacity of the softener is reached, the meter's contactor initiates regeneration. Regeneration—on a time and quantity cycle—is in three steps:

1. Backwashing—The duration of backwash is governed by a timer. Backwash takes 5 to 8 min. Flow is established by a rate controller in the hydraulic valve.

2. Regeneration—Sea water—taken directly from the ocean and filtered enroute—is pumped through the softener being regenerated. Duration of sea-water flow is also controlled by a timer (about 25 min).

Sea water is passed downward through the zeolite bed and out to the sewers. Flow rate is also governed by a rate controller in the master-control valve.

3. Rinsing—Zeolite beds are rinsed with fresh water to remove all traces of sea water. Fresh water is pumped downward through the beds and is wasted. Duration of rinse is also time-controlled (about 25 min).

When the three steps of regeneration are complete (one hour), the softening unit is returned to service automatically by the masterminding valve.

To prevent more than one unit from being regenerated at one time, the system is equipped with an electrical interlock.

• **Officials**—The $200,000 water plant, part of a $1,650,000 revenue-bond

DESIGN AND ENGINEERING DATA

Water-softening plant, Jacksonville Beach, Fla.

Supply: Three wells with about 1,400 gpm total artesian flow; hardness of water—about 18 gr per gal expressed as calcium carbonate; one 1,800 gpm electric-motor-driven centrifugal pump for boosting supply from wells, automatically actuated by float switch.

Plant Capacity: Flow—2 mgd; hardness removal from 320 to 70 ppm.

Treatment: Aeration, sodium-zeolite softening; chlorination; sea-water regeneration of softening beds.

Aeration: Three-tray slat aerator. Slats have two-inch clear openings. Top distributing tray has 1.5-in. holes on 6-in. centers.

Raw-water storage: One 0.4 mg underground reservoir, reinforced concrete, covered.

Transfer pumps: Two centrifugal units, electric-motor-driven. Capacities—1,800 gpm at 53-ft head.

Softeners: Three units, each 96-in. in dia. by 6 ft high. Operating pressure—50 psi. Depth of styrene-base-resin zeolite in each unit (Cochranex CRW)—24 in. Capacity of resin—12,000 gr hardness removal per cu ft between regenerations. Tanks are lined with baked Heresite (a plastic). Each softener is automatically controlled by a Cochrane Hydromatic multiport valve.

Stabilization: Softened water is stabilized by neutralized poly-phosphate.

Soft-water storage: Two ground reservoirs with a total capacity of 0.2 mg.

Chlorination: At high-service-pump suction. Maximum rate at design flow—about 5 ppm. Two 75 lb per 24 hr chlorinators.

High-service pumps: Two electric-motor-driven centrifugals. Total capacity—1,900 gpm at 135 ft total dynamic head.

Sea-water system: 22-in. dia strainer buried in gravel below mean low tide and piped to sump. Two deep-well-turbine pumps in sump (150 gpm at 70 ft head) force sea water through filters to softeners being regenerated. Pumps have automatic controls. Filters are 96 in. in dia. and have a 42-in. bed of sand and gravel. Filters backwashed through manually operated Hydromatic valve.

Building: Concrete block, reinforced concrete and light-steel girder roof. Houses softeners, filters, chlorinators, pumps and control equipment.

Cost: $200,000.

program for water and sewage facilities, was designed by Smith and Gillespie, Jacksonville consulting engineers. They also supervised construction and initial operation.

Contractors for the plant and seawater intake were: J. W. Meadows & Co. and Girvin and White. Both firms are located in Jacksonville.

Process equipment was furnished by Cochrane Corporation, Philadelphia. S. R. Applebaum is manager of the Cold Processes Division. The Boiler Equipment Service Co. of Atlanta, Ga. was Cochrane's representative on the job.

The public-works improvements are being carried out under Mayor H. A. Prather and City Manager (Mrs.) Clare G. Swanson.

SEAWATER ANALYSIS

Jacksonville Beach, Florida

Calcium hardness as $CaCO_3$	1,088
Magnesium hardness as $CaCO_3$	5,452
Sodium as $CaCO_3$	23,725
Total Cations	30,185
Bicarbonate as $CaCO_3$	110
Carbonate as $CaCO_3$	0
Chlorides as $CaCO_3$	27,500
Sulphate as $CaCO_3$	2,575
Total Anions	30,185
Ratio sodium salts to Hardness as $CaCO_3$	3.67
Free CL_2	0
Iron as Fe	0.1
Turbidity	5
Color	3
pH	8.6

TYPICAL RAW WATER ANALYSIS

Jacksonville Beach, Fla.
City Supply from artesian well. Raw water. Taken from tap.
Clear when drawn. No hydrogen-sulfide odor

Cations			ppm
Calcium	$(Ca++)$	as $CaCO_3$	166
Magnesium	$(Mg++)$	as $CaCO_3$	141
Sodium	$(Na+)$	as $CaCO_3$	33
Total cations		as $CaCO_3$	340

Anions			
Bicarbonate	(HCO_3-)	as $CaCO_3$	118
Carbonate	(CO_3-)	as $CaCO_3$	0
Hydroxide	$(OH-)$	as $CaCO_3$	0
Chloride	$(Cl-)$	as $CaCO_3$	21
Sulfate	(SO_4-)	as $CaCO_3$	201
Total anions		as $CaCO_3$	340

Total Hardness	as $CaCO_3$	307
Alkalinity A (Methyl Orange)	as $CaCO_3$	118
Alkalinity B (Phenolphthalein)	as $CaCO_3$	0
Free Carbon Dioxide	as CO_2	10
Iron	as Fe	0.1
Fluorides	as F	0.45
Silica	as SiO_2	20
Turbidity		0
Color		10
pH		7.35
Actual Hardness (as $CaCO_3$)		18 gr/gal

(1 grain per gal = 17.1 ppm)

Notes on legal decisions

Summaries of decisions relating to construction work prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill Book Co.)

Protection for materialmen

Many states have statutes providing that contractors shall not be paid in full until they produce proof that all bills for labor and materials have been paid. Thus a Texas statute (Article 5160 of the Revised Civil Statutes) provides that all monies due a contractor after the completion of a contract for a public work must be held by the public authority concerned until satisfactory evidence is submitted showing that all bills for labor and materials have been paid.

The Texas statute gives those furnishing labor or materials 90 days after the work is completed within which to file liens. In a recent case,[1] the municipal authority for which the work was being done, upon the completion of the work, paid the contractor the full contract price without requiring him to produce any proof that all bills for labor and materials had been paid. After the contractor had received such payment, and before the 90-day period for filing liens had expired, several materialmen filed liens for the price of unpaid materials furnished by them.

The general contractor after being paid in full became insolvent and its surety was forced to pay for the materials furnished by the lienors. The surety then brought the action against the municipality for which the work was being done, to recover the money paid by it to the materialmen. The surety's contention was that the money due the contractor upon the completion of the work constituted trust funds to secure payment to those who had furnished labor and materials for the job, and that it was wrongful for the authority to pay the contractor in full without demanding that the contractor furnish proof that all outstanding bills for labor and materials had been paid. The court sustained the surety's contention and gave it judgment against the municipality for the amount paid by it to the materialmen.

(1) City of Orange v Fidelity & Deposit Co., 180 F 2d 369, U. S. Court of Appeals, Fifth Circuit, March 2, 1950.

Equipment on cost-plus work

Where a construction contract provided that the contractor was to receive as compensation for the work performed the actual cost to himself of the work and labor performed and the materials and supplies furnished, either by himself or under subcontracts, and an amount in addition thereto equal to 7½% thereof as general contractor's profits, the general contractor is not entitled to charge up as an element of cost an item representing depreciation of equipment used by himself and by subcontractors during the performance of the work.[1]

This determination was predicated on the fact that the contract limited the items that could be charged up as an element of cost to cost of labor and materials and supplies furnished. Depreciation of equipment did not come within that category.

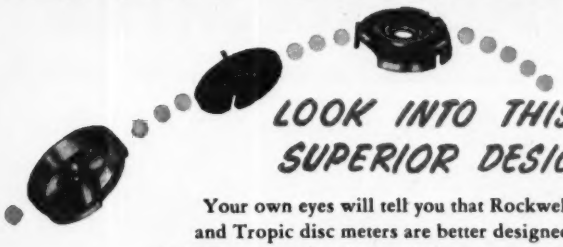
While rental of equipment is part of contractor's cost and is usually taken into account in cost-plus contracts, it does not constitute labor or materials. Hence, where the contract, which was prepared by the contractor, provided for payment on the basis of the actual cost of labor performed and materials used in the erection of the structure, the contractor is not entitled to include rental of equipment as an element of cost.[2]

The court in its opinion in the latter case stated that while rental of equipment was part of the contractor's costs and is usually taken into account in cost-plus contracts in determining the cost of the work, it is neither labor performed or materials furnished.

From the above cases it should be apparent that contractors, in entering cost-plus contracts, should not limit payment to the cost of labor performed and materials furnished. The contract should make specific provision not alone for payment for rental of equipment and depreciation, but also for the use of equipment owned by the contractor.

(1) Savannah, A.&N. Ry. Co. v Oliver, 174 Fed. 140.
(2) Willett v Davis, 193 P.2d 321, Supreme Court of Washington, May 3, 1948.

Rockwell Disc Meters



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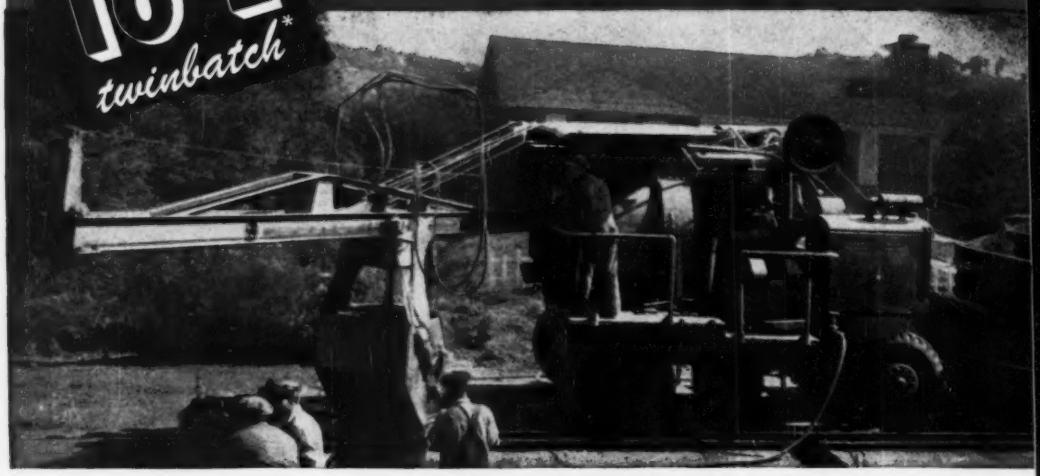
KOEHRING 16-E *twinbatch** — MOBILE • VERSATILE •



KOEHRING 16-E *twinbatch* provides many special operating advantages for intermediate paving and all types of concrete construction work: 60° elevating boom raises controlled-discharge bucket to a dumping height of 21 feet (higher with special boom) . . . gives complete flexibility of application for elevated pouring. 16-E *twinbatch* mixes and distributes up to 50 cu. yds. per hour, exceeding the capacity of the larger 27-E single drum paver. Big, 92-inch wide skip raises in only 7 seconds . . . split-second Autocycle mixing is controlled by Koehring Batchmeter, saves time on every phase of the operating cycle. As a result, the 16-E can hit a top output of 86.7 batches an hour, on 60-second mixing cycle specification. Vertical, syphon-type water tank assures consistent, maximum strength concrete . . . quarantees accuracy to meet all specifications.

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16-E *Tandemtwin* PAVER . . .
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*TRADEMARK Reg. U. S. Pat. Off. REG.

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FOR STREETS AND HIGHWAY WIDENING

Rubber-tired mobility of 16-E *twinbatch* permits working over streets and new pavement strips without planking. Saves time on the job, and job-to-job. Has overall width of only 8 feet, plus speeds to 6 m.p.h., for fast, self-powered moves.

BRIDGES . . . .

You're not grounded with the 16-E . . . reaches up and out to discharge mixed concrete into forms, hoppers, chutes. Double-channel structural boom is 25 feet long . . . swings in a 160° arc . . . elevates 60° . . . holds firmly in any position . . . discharges controlled bucket at any height up to 21 feet.

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For pouring culverts, and in other similar restricted areas, controlled door on bucket allows gradual discharge, prevents spillage. Clamshell-type bucket door can be opened or closed at any time, operates by hydraulic control. All operating mechanism is outside bucket, prevents clogging. Adjustable strap hangers and perfect oscillation assure vertical dumping position of bucket.

FOUNDATIONS . . .

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The high-production 16-E also can be set up as a central mix plant. Elevated pouring makes it handy for loading trucks, and for handling a variety of miscellaneous batching applications.

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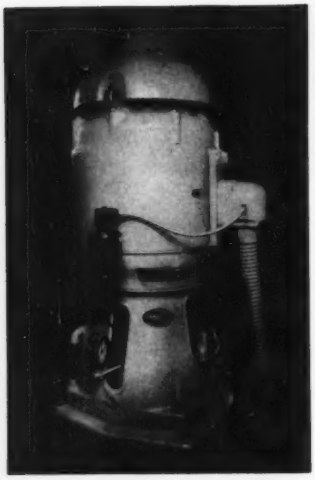

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READER COMMENT

Wind design for tall buildings

Sir: I have noted that in the 3rd edition of Portland Cement Association's booklet entitled "Continuity in Concrete Building Frames" they have closely paralleled Elwyn E. Seelye's article, "Wind on Tall Buildings" published in ENGINEERING NEWS-RECORD, March 20, 1930.

For instance, the analysis of the distribution of shears given by Seelye in his article and the analysis of the same problem by the Portland Cement Association are identical in result, even though the approach is somewhat different, it being more fundamental in Seelye's analysis.

I have also noted that the torsional approach is the same as Seelye's except that they have taken into account both axes, which makes it more general.

It is also to be noted that the Portland Cement Association gives credit for this torsional method to Albert Smith as per his paper in the Journal of Western Society of Engineers, February 1933, whereas Mr. Seelye's article was published in March 1930.

NORMAN E. SCHLENKER
Engineer-in-Charge
Seelye, Stevenson & Value
Consulting Engineer, N. Y. C.

Stresses due to welding

Sir: I read with interest the article entitled, "Houston Goes All Out For Welding" (ENR Jan. 11, p. 43). Of particular interest to me was the sequence of welding operations that was used in beam to column connections.

If, as stated in the article, the first fillet weld to the beam web resists the shrinkage of the top-flange butt weld, this butt weld will, therefore, carry an initial tensile force equivalent to this resistance, which is said to be 20,000 to 30,000 lb. The bottom-flange weld would also carry this initial tensile stress due to the resistance to shrinkage.

The girders described in this article have apparently been designed taking into account continuity, which of course requires the beams to have rigid end connections. Assuming full or partial end-fixity, the top flange of the beam at its connection to the column would be in tension, while the bottom flange would be in compression. The top and bottom-flange butt welds would naturally be stressed the same and to the same intensity as the respective flanges they connect.

This condition is quite beneficial, as is pointed out in the article, to the bottom flange weld, where compression due to the exterior loading condition would relieve the initial tension already in this weld. But would not the tension in the top-flange butt weld due to the exterior loading condition be additive to the tension already in this weld due to the resistance to shrinkage of this weld offered by the first fillet weld? It appears to me, if such is the case, that the most critically stressed section in the design would be this top flange butt weld—a most undesirable situation.

P. B. TEMPLE
Structural Engineer
Cleveland, Ohio

Suburban planning

Sir: One of my staff has brought to my attention an editorial in the Nov. 23, issue of ENGINEERING NEWS-RECORD (Unplanned Housing) in which there are references made to "the difficulty and cost of zoning and long-range planning for the loosely knit suburban areas". As this alert young man points out, there should not be any difficulty in making a plan nor should the cost be proportionately any greater than for design of sewers, water supply, buildings and such. This staff member felt that the editorial gave the impression that zoning and planning were prohibitively costly, which is really not true. I doubt that the writer of this editorial intended to create this impression.

The real problem in this matter is that our cities have far outgrown their boundaries and little or no adequate planning is being undertaken. Unfortunately, there is seldom any agency of government with power to prepare and to enforce adequate overall plans. The inadequacies of planning that characterized the growth of American cities during the Nineteenth Century and the early part of this century is now being repeated on a much larger scale, since the fringe areas often greatly exceed in size the area which is incorporated. That is why requirement for preparation of a comprehensive plan was included in the basic legislation providing for the Missouri-Illinois Bi-State Metropolitan District and in the act now before Congress providing for reorganization of the National Capital Park and Planning Commission.

HARLAND BARTHOLOMEW
St. Louis, Mo.

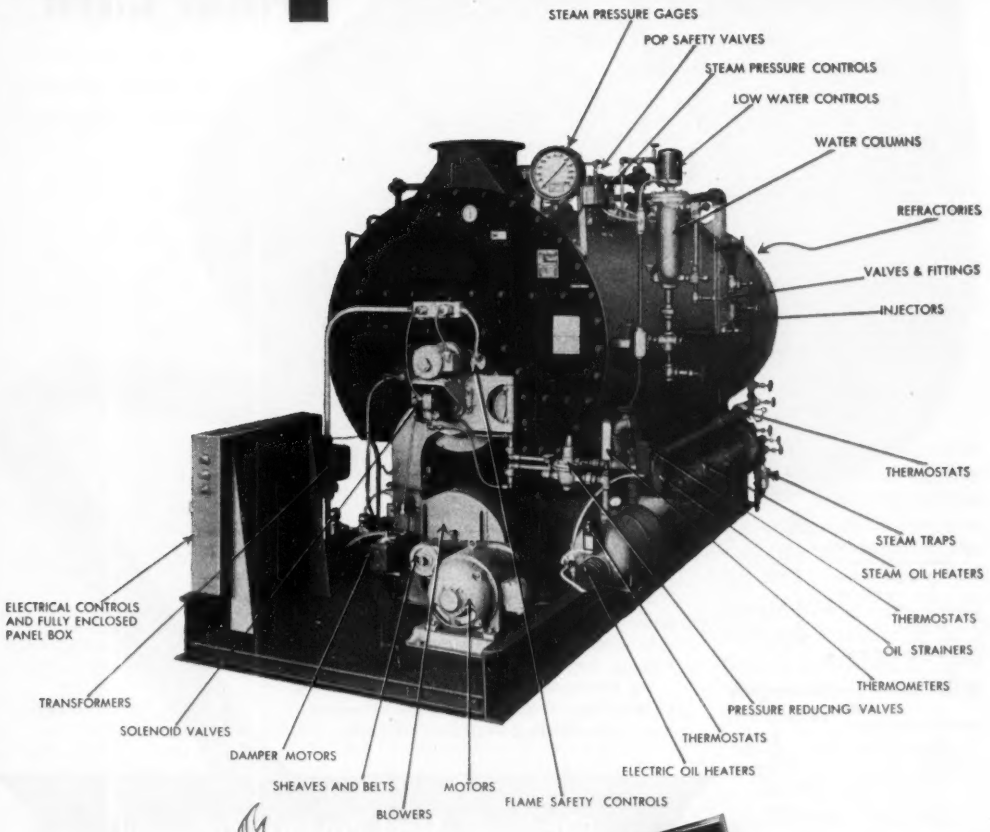
Matched quality components

another reason why you get a greater return from your investment in a Cleaver-Brooks Steam Boiler

Cleaver-Brooks steam boiler quality is the sum of many qualities. From the rolling-in of the first tube and through every step to completion, the highest standard of engineering, material and workmanship prevail. Every component is the tested product of a manufacturer of known standing — carefully selected by Cleaver-Brooks engineers through test and research.

Your Cleaver-Brooks boiler is the end-product of many specialized engineering talents and manufacturing skills. When you install Cleaver-Brooks you have a steam boiler of foremost quality — with immediate and long-range cost-saving advantages. Cleaver-Brooks self-contained Boilers — 15 to 500 HP 15 to 250 lb. p.s.i.— for oil, gas, combination oil and gas firing.

CLEAVER-BROOKS CO., 389 E. Keefe Ave., Milwaukee 12, Wis.



Cleaver-Brooks

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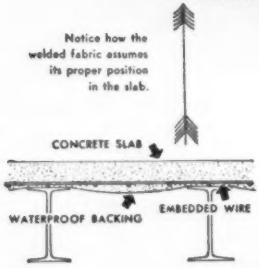
NEW—The Cleaver-Brooks Steam Boiler Catalog — interesting — informative — beautifully illustrated. Write—on your business letterhead for your copy — no obligation.

You speed construction and cut costs with Pittsburgh Steeltex Floor Lath



Pittsburgh Steeltex Floor Lath speeds construction and cuts costs because it permits you to pour your floors while continuing complete operations on the floor below. You get a stronger slab because it is properly reinforced with welded wire mesh—properly cured because the moisture is retained by waterproof backing. For further detailed reasons for specifying *Steeltex*, see Sweet's or write for catalog D.S. 133, Dept. ENR, Pittsburgh Steel Products Co., Grant Building, Pittsburgh 30, Penna.

Pittsburgh Steel Products Company

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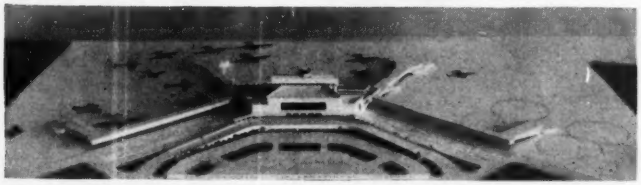
MUNICIPAL AFFAIRS



AN INTERNATIONAL AIRPORT for San Francisco is shown above in model, with the ramp for incoming passenger traffic in the foreground. The building's design calls for separation of outgoing and incoming domestic passenger traffic, so that passengers debarking from planes leave the airport on the lower level, and those embarking use the upper level. Expected to handle 3-4 million passengers annually, the airport plans call for minimum number of bearing walls so that space may be freely converted from one use to another by shifting of partitions. Twenty-two four-engine planes can be accommodated simultaneously outside. There will be seven stories in all, with the top two for observation platform and control tower. The cost is estimated at $4,500,000. Plans are now being acted upon by the CAA and the San Francisco Art Commission. Architect engineer was Wm. P. Day.

Consider 180-block slum clearance at Atlanta, Ga.

A multi-million-dollar slum clearance development is to be undertaken in Atlanta, Ga. It will include 160 blocks on the south side and another 20 blocks off Hemphill Ave., near Georgia Institute of Technology. Plans are to start redevelopment in 1951.

The South Side slum section is bounded by Memorial Drive, Whitehall St., the Southern Railway, Glenn St., and Connally St., a section of about 650 acres. Approximately 146 acres west of Hemphill Ave., between North Ave. and Eighth St. will be cleared and developed in the vicinity of Georgia Tech.

So far $2,700,000 in federal funds have been earmarked for the Atlanta project to be used in accordance with the National Housing Act of 1949. The program is under the direction of the Atlanta Housing Authority, James H. Therrell director.

The plan is to relocate present residents, then demolish all houses and buildings, after which the area will be leveled and new streets laid out to fit the proposed redevelopment.

High cost of tin cans

It'll cost Los Angeles nearly $90,000 more a year to dispose of tin cans, bottles and other non-combustibles under a proposed new 10-yr contract.

The present contract with the Los Angeles By-Products Co expires Dec 31, and only one bid, from the current contractor, was received. The city council is expected to approve the contract.

Under the present sliding scale agreement, the city receives $17,250 a year from the contractor, while under the new agreement the city would pay the contractor $72,450 for a net cost next year, compared to this, of $89,700. About 57,500-cu yd of rubbish are collected each month.

The high cost of labor, transportation and a new collection system by which Los Angeles will eliminate segregation of ashes from other rubbish, is blamed for the high bid.

Inclosed body trucks save money at Hartford

Ash and rubbish collection at Hartford, Conn., has been improved by the use of eight inclosed body trucks, reports City Manager C. F. Sharpe. These trucks operate with a crew of three men each and can pack in 35 cu yd of rubbish per trip. The old open trucks require a minimum crew of four and carry only 13 to 15 cu yd. The city now has 13 inclosed and 14 open body trucks and hopes to continue a replacement program this year. During the last year 486,500 cu yd of ashes and rubbish were collected at a cost of 85 cents per cu. yd. The refuse was disposed of by dumping.

Garbage collection continued under the private contractor system. By using 36 contractors, each assigned to a specific route, it has been possible to keep costs below those of many communities. The present cost is about $1.50 per stop per year, and with 45,000 stops it totals $677,500. The present method of feeding garbage to hogs will have to be replaced in time on account of the trend toward community elimination of hog farms. A survey of incineration is planned.

PAVEMENT...

The Connecticut River Bridge approach, Old Lyme, Conn., is paved with Darex AEA concrete to increase resistance to freezing, thawing, and de-icing salt action.

At Hume Pipe of N. E., Inc., Darex AEA is used in concrete pipe manufacture to increase production, improve quality.

...or PIPE

Darex *AEA* is a catalyzed air entraining agent, specifically formulated for making air entrained concrete. Darex AEA is being used in all types of concrete, all over the world.

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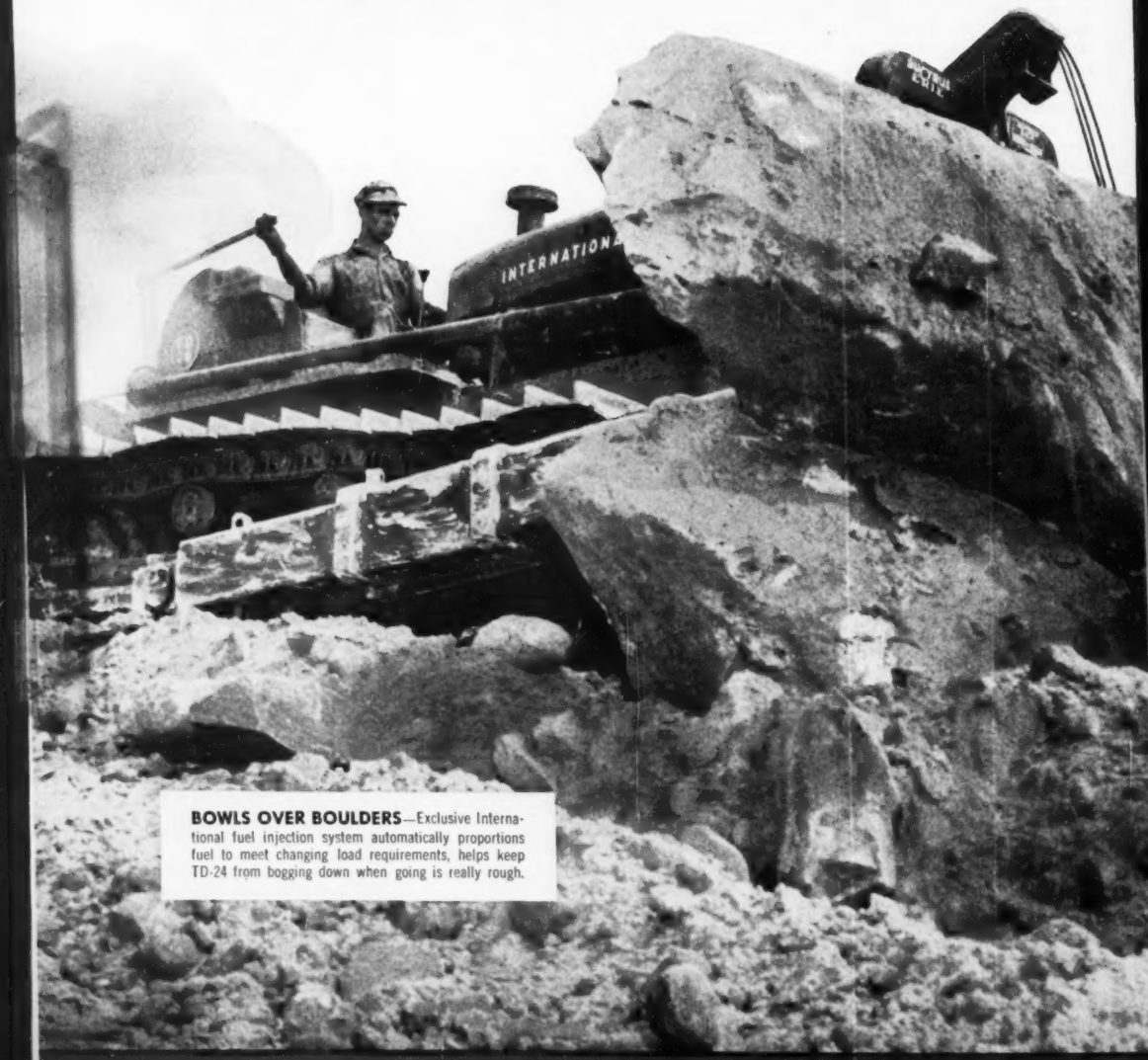
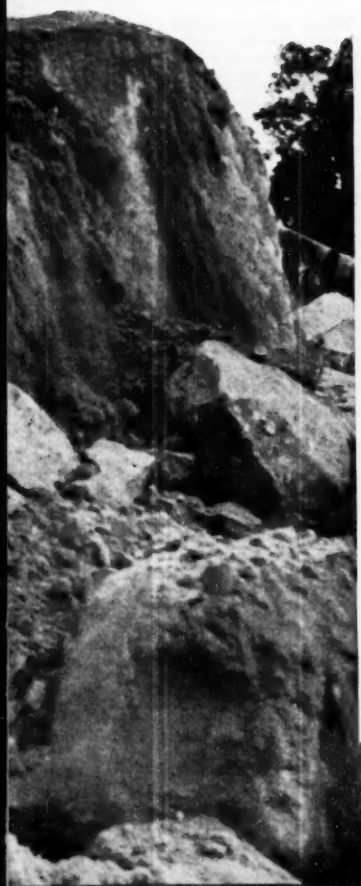
Pushover for



BOWLS OVER BOULDERS—Exclusive International fuel injection system automatically proportions fuel to meet changing load requirements, helps keep TD-24 from bogging down when going is really rough.

the Champ



The champ makes it look easy. The champ has the crowd with him. The champ takes on all comers.

What makes the champ the champ?

In a man it's guts, strength, skill and a fighting heart.

In the TD-24 it's gears, metal and go, translated into irresistible strength, stamina and "handle-ability."

Here are a few things that make the biggest job a pushover for the TD-24.

148 maximum drawbar horsepower—more than any other crawler.

Eight forward speeds, eight reverse.

Speeds up to 7.8 mph in either direction.

Synchromesh transmission—you "shift on-the-go."

Exclusive International push-button, all-weather starting.

Planet Power steering, finger-tip control for pivot turns, feathered turns, turns with power on both tracks plus instant shift up or down one gear without declutching.

Reserve torque to make the TD-24 hang on to overloads and walk away with as much as ten cubic yards on the blade.

The word is out on the "grapevine." At conventions, bid-openings, contract-lettings, contractors are telling each other how the TD-24 does more work with more speed—has more lugging ability—moves more pay-dirt faster than any other crawler on the market.

Want more facts . . . more proof? Ask your International Industrial Distributor for the low-down on the TD-24. You'll be a TD-24 man from then on in!

INTERNATIONAL HARVESTER COMPANY
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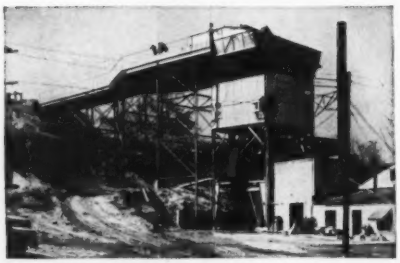
BLUE BRUTE USERS AGREE:

"It's a Great Line of Mixers!"



FOR CENTRAL MIXING This modern plant of the Clark Certified Concrete Company, Inc., of Baltimore, Md., produced 125,000 yds. of pre-mixed concrete during the past year. Vice-President Duncan writes: **"Your Blue Brute 84-S Stationary Mixer has proven entirely satisfactory. Maintenance costs have been practically nothing."**

FOR PORTABLE MIXING. Le Roy W. Vival, chief engineer of the O'Sullivan Rubber Corporation, Winchester, Va., reports: **"We are extremely gratified by our Blue Brute 3½S Tilting Mixer, which has had two years of constant, severe use. It is extremely mobile, well constructed and performs excellently. Long exposure has not decreased its efficiency. The mixing cycle is fast and the mix consistently uniform. It is a pleasure to endorse and recommend this equipment."**

FOR TRANSIT MIXING. President Bob McCorkle of the Abilene, Texas, Concrete Company, gives his reasons for re-ordering Blue Brute Hi-Up Truck Mixers: **"We have compared competitive makes on our jobs and find your Hi-Ups best in every way. Maintenance costs have been negligible. Just purchased your first chain-drive Hi-Up and find it even better than the older machines — faster charging and discharging, easier to maintain and smoother running."**

FOR PLACING. In building the Washburn vehicular tunnel under the Houston, Texas, ship channel, the "Trench method" of construction was used. The last yard or two of concrete placed in each of the section joints had to be placed *straight upwards* — a tricky pouring problem. Merritt-Chapman & Scott Corporation reports **an easy solution was found with the aid of a Blue Brute Pneumatic Placer, which performed excellently.**

Yes, among Blue Brute owners it's a never-ending story of more concrete at lower cost, trouble-free operation, time and money saved in every detail of mixing operations. Why not look into this proof that *there's more worth in Worthington*? See your nearby Worthington-Blue Brute Distributor, or write for bulletins on mixer types in which you're interested.

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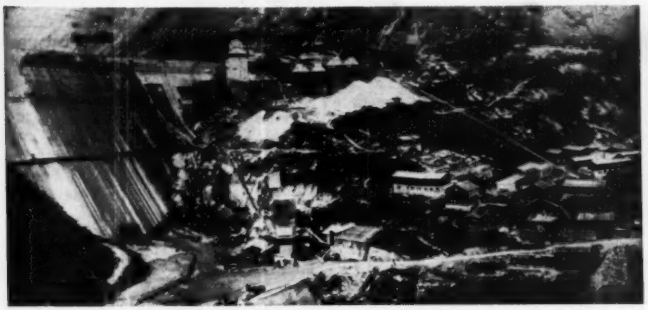
DEVELOPMENTS ABROAD



Swiss complete new power dam

Swiss engineers last September completed the third of four dams that form the Oberhasli power network near Innertkirchen, Switzerland.

The new dam is known as Räther-ichsboden dam, a gravity type concrete structure 276 ft high, with an overall length of 1,450 ft.

The accompanying photo shows the structure from the downstream side. Concreting work is usually possible only from about the middle of June until early October.

Concrete aggregate was produced locally, and fed to a batching plant shown in the top center of the photograph. This batching plant, built by the C. F. Johnson Co., Champaign, Ill., was equipped with automatic batching devices and two tilting mixers of 4 cu yd capacity each. The concrete was delivered to the dam by the overhead cableway shown at the upper left.

All of the equipment is now being moved to the site of a fourth structure, Oberaar Dam, where concreting operations will start next year.

The Overhasli system utilizes water coming down the Aare River, which in turn is fed by three glaciers in the area. The first dams in the system were Grimsel Dam and Gelmer Dam, built in the period 1925—1932.

Point 4 aid continued for Ceylonese projects

Under a new general agreement signed by the Ceylonese government for Point 4 technical assistance from the United States, Paul von der Lippe, Bureau of Reclamation engineer, will remain in Ceylon another year to advise that government on development matters.

A major program on which he is giving expert engineering advice is the planning for the rehabilitation or rebuilding of extensive ancient irrigation works. Another is advising on the administration of the Gal Oya Dam and power plant (ENR, June 16, 1949 p. 23) contracts totaling approximately $15,000,000. This is a Ceylonese government project which is being built in the heart of the jungle.

As an advisor for the Gal Oya project, now being constructed under contract by Morrison-Knudsen Co., Mr. von der Lippe has penetrated the heart of the Ceylonese jungle where American engineers and Ceylonese laborers are working to complete the dam and power plant. The jungle was smashed down with bulldozers, and modern tractors were used to build 30 miles of road to the site, which is about 85 miles from the city of Colombo.

When Gal Oya Dam is finished, its works will impound water to irrigate approximately 100,000 acres which will add 5,000,000 bushels of rice yearly to the world crop. The 10,000-kw power plant will be capable of providing energy for a big development in the sugar cane industry.

Less Marshall Plan aid proves European recovery

During the calendar year 1950 Marshall Plan purchase approvals for European recovery goods and services were issued at a rate of about $190,000,000 a month.

On the basis of comparable figures, the monthly rate for 1949 was $324,000,000.

It is pointed out by the ECA that the drop reflects the reduction in American aid made possible as the industries of Europe recover from the last world war.

COMMENT *from the* **BUTLER ENGINEER**

February, 1951

The Painted Prisoner

Mighty interesting the sort of things a fellow runs into during the course of many years of engineering. For instance, an aggregate and bulk cement plant we at Butler Bin built for a contractor who had himself a Navy paving project on Guam. The plants were delivered shortly before Pearl Harbor.

ACT I. Guam. The boys on the dual drum and those on the Butler Batchers were having themselves a fine race — the Butler units keeping a bit more than two big steps ahead of the trucks. Concrete going down like unrolling the white carpet at a church wedding. Just then the Japs struck!

ACT II. Jap occupation. Butler equipment a prisoner of the Nips.

ACT III. Months later. The Americans came back — to stay. Apparently the Japs knew a good thing when they saw it for the Butler Plants stood unchanged except for layer upon layer of paint. And more layers. Not coats; — layers!

Don't ask me why the Japs tried to make those bins look like the front line at Minsky's. Perhaps it was in Tojo's Rule Book.

Enter: a Seabee from Michigan who had spent most of his civilian life in the not-too-gentle art of paving. He climbed over the bins to check their condition. A small, smooth, rectangular area, barely raised above the surrounding subbase, base and wearing courses of paint, caught his eye. With his knife he dug, scraped and peeled. Into view came the letter B. Next a U. All right. You've guessed it. The Butler nameplate.

"Look," he told us later. "I was practically born and raised with Butler equipment. That nameplate almost made me feel like I had both arms around something very special at home!"

See you soon.

The Butler Engineer

BUTLER BIN COMPANY
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MEN AND JOBS

Charles Waldmann, civil engineer, has been appointed director of development for the Chicago Housing Authority. He formerly supervised development of the Public Housing Administration's 10,000-unit program in Los Angeles. Previously he served as a consultant on 30 housing projects for the Prudential Life Insurance Co. He holds degrees in civil, electrical and mechanical engineering from the Royal University for Engineering in Budapest.

Ray F. Smock has been reappointed state highway secretary of Pennsylvania.

Ernest A. Stetzer, 55, Bucyrus, O., for the past six years chief deputy county engineer under the late Howard V. Horner, has been named to serve the unexpired term as Crawford County engineer, until Dec. 31, 1952, succeeding Horner. Stetzer has been an employe of the county since 1929, with the exception of two years.

Louis Bunts has been named Akron, Ohio, city smoke engineer, going from a similar post in Winston-Salem, N. C., to replace the late Capt. Baxter Bruce.

J. H. Davis, who has been assistant district engineer for the Texas State Highway Department at Dallas for the last 16 years, has been made assistant to Dallas County Engineer R. H. Clinger. Davis will be in charge of the engineering office administration and the right-of-way department. He holds an engineering degree from Southern Methodist University

Otto Weymiller has been elected highway commissioner of Clark County, Wis. He had held that post for 25 years prior to 1945.

Clayton G. Seitz, a structural engineer formerly with the Philadelphia regional forest service, has been appointed bridge engineer for the north central region of the U. S. Forest Service with his office in Milwaukee, Wis.

City Council of Halifax, N. S., has appointed **A. C. Harris** as Commissioner of Works and E. C. Thomas as Deputy Works Commissioner.

George O. Zalkind, project engineer with Gibbs & Hill, Inc., consulting engineers, N. Y. City, has gone to Italy, where the firm is supervising the construction of several power plants. He will be in Milan for the greater part of 1951.

Stanley B. Hunt, chief of the engineering division of the Buffalo District Office, U. S. Corps of Engineers, has received the Commendation Ribbon for wartime service. As a colonel in charge of the military engineering division between July, 1941, and May, 1945, he won the citation for his "vital role in the implementation and completion of a vast construction, supply and contract-termination program." Mr. Hunt has been associated with the Buffalo office since shortly after his graduation from Michigan State College in 1929.

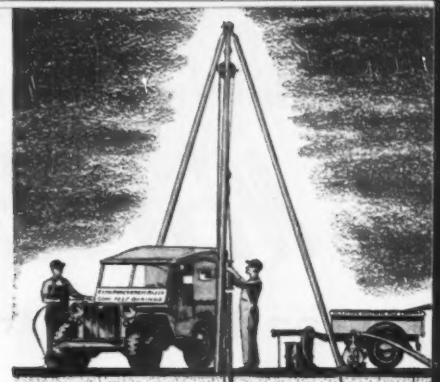
Col. W. C. Sale will be resident engineer for the 750-bed $12,000,000

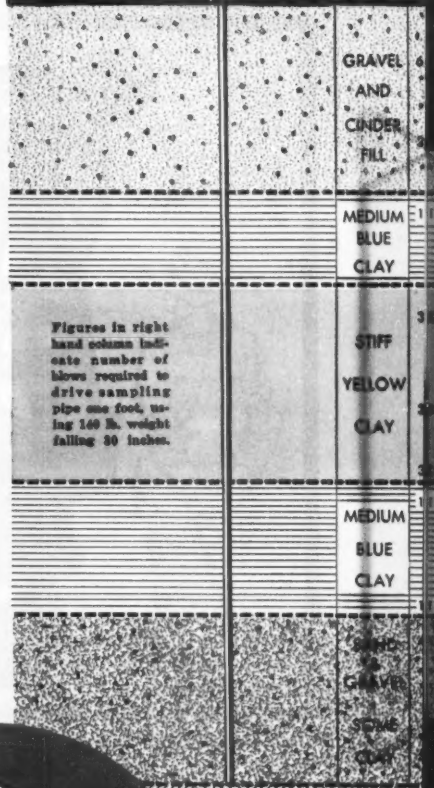
(*Continued on page 62*)

Top trio in field operations on the recently completed Port Authority Bus Terminal, New York City, were Turner Construction Co. men: Walter F. Conlin, project superintendent (center); M. J. McMahon, superintendent of structural operations (left); and L. W. Hall, superintendent of general operations (right).

Materials engineers connected with the construction of an experimental concrete pavement near Russell, Kan., are, left to right, C. O. Baker, resident engineer; C. C. Oleson, principal research engineer, Portland Cement Association; and Roland H. Williams, field engineer, materials division, Kansas State Highway Commission.

GOW
SOIL BORINGS
BY Raymond




GRAVEL AND CINDER FILL
MEDIUM BLUE CLAY
Figures in right hand column indicate number of blows required to drive sampling pipe one foot, using 140 lb. weight falling 30 inches.
STIFF YELLOW CLAY
MEDIUM BLUE CLAY
REFUSAL – LEDGE ROCK OR BOULDER

Carefully made soil investigations are of great value to Owners, Architects and Engineers in the selection of building sites and the determination of proper structural foundations.

Specify dependable Gow borings by Raymond and you will secure information that will supply the basis for sound engineering decisions.

Their low cost will surprise you.

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THE SCOPE OF RAYMOND'S ACTIVITIES includes, in addition to borings for soil investigation, every recognized type of foundation construction—concrete, composite, precast, steel, pipe and wood piles. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements, and cement mortar lining of oil and water pipe lines 4" to 144" in diameter by the Centriline Corporation, a Raymond subsidiary.

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Compare the David White Engineers' Transit with all others—feature for feature — price for price. Compare them for accuracy — long durability — built-in quality. To meet your preference, this instrument is available with "U" or "A" type standards. You'll find you'll buy right when you buy a David White.

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We offer complete, prompt repair service on all makes of instruments — levels, transits, theodolites, etc.

General Medical Hospital (VA) to be built on the former site of Trees Gym above the University of Pittsburgh football stadium in Oakland district of Pittsburgh, Pa.

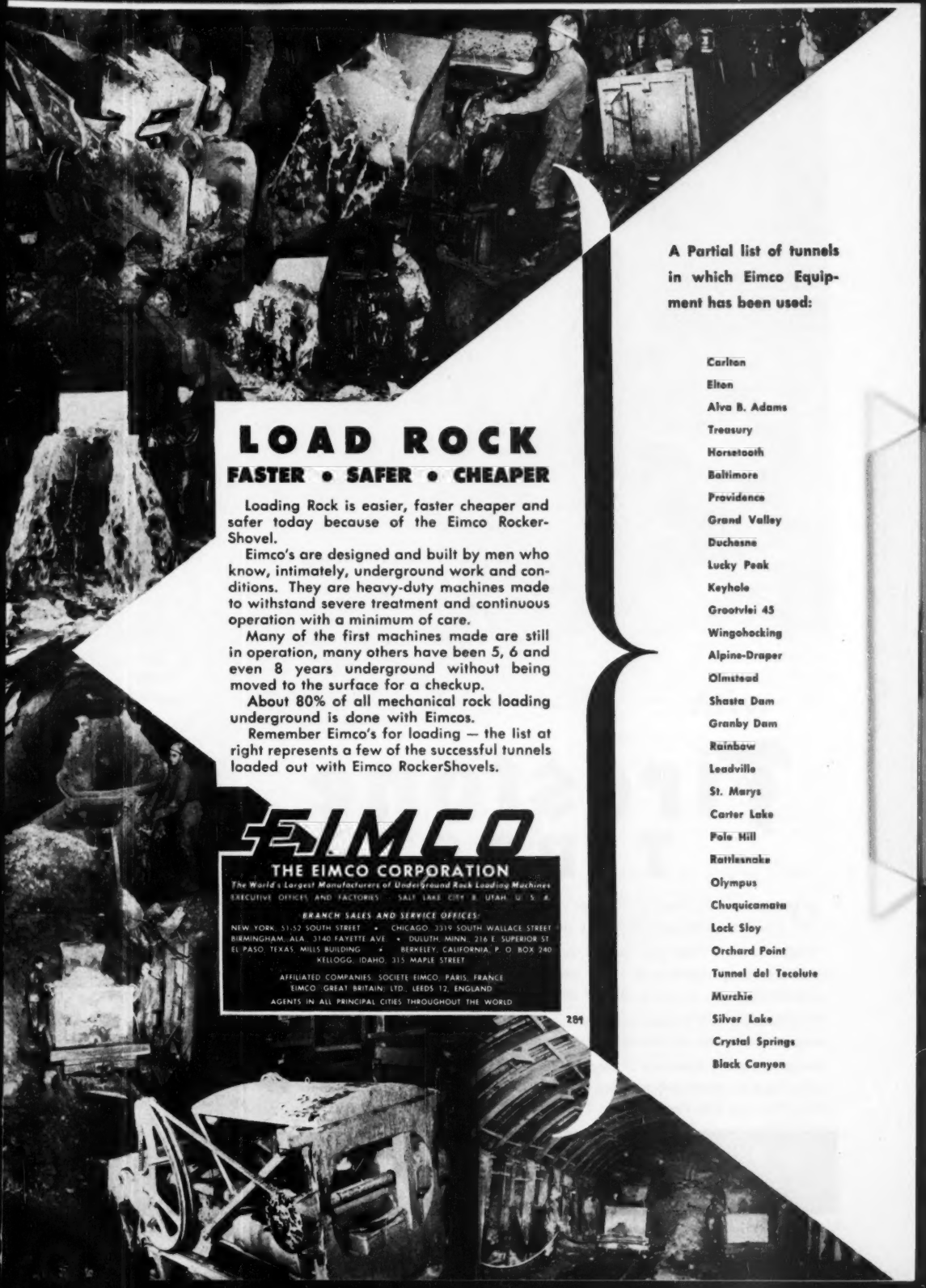
Louis H. Oppenheim has been appointed assistant general manager of Kaiser Engineers, a division of Kaiser Industries, Inc., Oakland, Calif. He will also continue to serve as assistant chief engineer of Kaiser Engineers. He joined the Kaiser organizations in 1938 when he was appointed plant engineer of the Radum sand and gravel plant of the Henry J. Kaiser Co. He was connected with the design and construction of the Fontana plant of Kaiser Steel, and ordnance plants at Denver, Colo., and Scranton, Pa. He is a graduate of the University of California, 1938.

Col. Ralph E. Cruse has been appointed Philadelphia district engineer for the Army Engineers to succeed **Col. Earl E. Gesler.** Colonel Cruse was formerly district engineer at Norfolk, Va., and he also served in the Chicago, Jacksonville and Los Angeles districts. Colonel Gesler has been appointed president of the Beach Erosion Board in the Office of the Chief of Army Engineers.

Herbert T. Slade, Memphis, Tenn., has retired from the U. S. Engineer office after 35 years. He has been engaged in planning and design of flood control structures.

Robert S. Bowman, who is completing an engineering course at Akron University, has been named sanitarian for the Ashland City-Ashland County, Ohio, health department, succeeding **Donald L. Schacht.**

On a high vantage point overlooking the site of the 78,000,000-cu yd rolled-fill Oahe Dam being built by the Corps of Engineers on the Missouri River near Pierre, S. D. are those in charge, left to right: Lt. Col. A. D. Starbird, area engineer; L. G. Leavitt, assistant area engineer; and L. R. Crist, resident engineer.



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Loading Rock is easier, faster cheaper and safer today because of the Eimco Rocker-Shovel.

Eimco's are designed and built by men who know, intimately, underground work and conditions. They are heavy-duty machines made to withstand severe treatment and continuous operation with a minimum of care.

Many of the first machines made are still in operation, many others have been 5, 6 and even 8 years underground without being moved to the surface for a checkup.

About 80% of all mechanical rock loading underground is done with Eimcos.

Remember Eimco's for loading — the list at right represents a few of the successful tunnels loaded out with Eimco RockerShovels.

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AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

284

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- Horsetooth
- Baltimore
- Providence
- Grand Valley
- Duchesne
- Lucky Peak
- Keyhole
- Grootvlei 45
- Wingohocking
- Alpine-Draper
- Olmstead
- Shasta Dam
- Granby Dam
- Rainbow
- Leadville
- St. Marys
- Carter Lake
- Pole Hill
- Rattlesnake
- Olympus
- Chuquicamata
- Lock Sloy
- Orchard Point
- Tunnel del Tecolute
- Murchie
- Silver Lake
- Crystal Springs
- Black Canyon

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MEETINGS

At the winter meeting of the North Carolina Concrete Masonry Association P. L. Barnes presided and the chief speaker was George Ross, director of the North Carolina State Department of Conservation and Development, who spoke on "Results of Engineering Investigations to Determine the Possibility of Establishing a Cement Plant in North Carolina"

Ohio Home Builders Association has elected Peter D. Kleist, Cleveland, president, succeeding Ivan H. Gore. Others elected: Joseph J. Robers, Cincinnati, vice-president; M. E. Kimmey, Dayton, secretary; and A. B. Stanberry, Toledo, tresaurer. Area vice-presidents: Everett Andrews, Cleveland; George Hartman, Youngstown; Earl Lawrence, Canton-Akron; Raynor B. Pyle, Toledo; Paul Kessler, Dayton; Walter Shapter, Columbus; and Thomas McIlvane, Cincinnati.

W. W. Adkins of Asheboro has been elected chairman of the North Carolina section of the American Water Works Association and the North Carolina Sewage Works Association. He succeeds E. R. Tull of Rockingham. Other officers elected: H. F. Davis, Charlotte, vice-chairman; E. C. Hubbard, Raleigh, secretary-treasurer, and W. F. Stokes, Hendersonville, trustee.

A committee of three engineers of Amherst, N. S., is investigating possibilities of establishing a branch of the Engineering Institute of Canada at Amherst, with membership within 30 miles. The naming of the committee was at a preliminary meeting with Col. L. F. Grant, field secretary of the EIC. The committee members are, Donald Bird, J. N. Ritchie and Edward DeWolfe.

C. D. Williams of Gainesville has been elected president of the Florida Section of the American Society of Civil Engineers to succeed Edward M. Broadhurst of Jacksonville. J. F. Shivler was elected vice-president and John B. O'Engle Jr. secretary-treasurer. Both are from Jacksonville.

The Puerto Rico College of Engineers, a professional organization of 1955 engineers, 848 of whom are civil engineers, has elected these directors: Juan Cesar Cordero Davila, president; Angel Silva, vice-president; Manuel Gonzalez Seijo, treasurer; Alberio Girod, auditor; Gustavo E. Padilla, secretary; and members of the board, Pedro Luis Amador, Juan Diaz Santana, Manuel Cruz Vargas, Francisco Nin Devesa, Rafael Soltero Palermo and Jose Luis Capaceti.

James A. Rives, professor of sanitary engineering at Virginia Polytechnic Institute, has been elected president of the Virginia Society of Professional Engineers. Other officers: E. W. Farley, Jr., 1st vice-president; E. S. Holland, 2nd vice-president; W. R. Glidden, director at large; and E. H. Ruehl, secretary-treasurer.

J. E. Guill has been elected president of the Greensboro, N. C., Engineers Club. Other officers: William Folk, vice-president; J. E. Welch, secretary-treasurer; and J. E. Hart and M. F. DuChateau, directors.

M. W. Clark has been elected president of the Wilmington, N. C., Engineers Club, succeeding L. I. Lassiter. Other officers: Robert F. Coleman, Jr., vice-president; Sam D. McMillan, secretary-treasurer; and N. C. Magnuson and T. H. Hall, members of the executive committee.

CALENDAR

Association of Asphalt Paving Technologists, Cosmopolitan Hotel, Denver, Colo., Feb. 5-7.
N. J. Section, AWWA, luncheon meeting, Hotel Essex House, Newark, N. J., Feb. 14.
Midwinter Housing Conference, S. W. Research Institute's division of Housing and Construction Technology, Statler Hotel, Washington, D. C., Feb. 13-14.
National Council for Stream Improvement, Inc., annual meetings, The Waldorf-Astoria, N. Y. City. Feb. 19-22.
Illinois Annual Conference on Highway Engineering, Urbana, Ill., Feb. 20-22.
American Concrete Institute, St. Francis Hotel, San Francisco, Calif., Feb. 20-24.
Industrial Waste Conference, Purdue University, La Fayette, Ind., Feb. 21-23.
American Society of Civil Engineers, convention, Rice Hotel, Houston, Texas, Feb. 21-23.
Associated General Contractors of America, annual convention, Hotel Statler, Boston, Mass., Feb. 26-March 1.
Midwest conference, Building Officials and Inspectors, Purdue University, La Fayette, Ind., Feb. 26-28.
American Concrete Pipe Association, Waldorf-Astoria Hotel, New York City, March 1-3.
American Society for Testing Materials, spring meeting. Netherland-Plaza Hotel, Cincinnati, Ohio, week of March 5.
American Road Builders Association, Schroeder Hotel, Milwaukee, Wis., March 12-14.
American Railway Engineering Association, Chicago, Ill., March 13-15.
N. J. Sewage and Industrial Wastes Association, Haddon Hall Hotel, Atlantic City, N. J., March 14-16.
Structural Engineering Conference, University of Florida, Gainesville, Fla., March 16-17.
N. Y., State Association of Highway Engineers, Rochester, N. Y., March 28-30.
N. J., Society of Professional Engineers, Haddon Hall, Atlantic City, N. J., Apr. 6-7.
Concrete Reinforcing Steel Institute, annual meeting. The Homestead, Hot Springs, Va., April 16-21.

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EDUCATION and RESEARCH

National asphalt research center is established

The establishment of a national asphalt research center at the Franklin Institute laboratories for research and development, Philadelphia, Pa., has been announced by Executive Vice-president Henry B. Allen.

With sponsoring companies representing oil, roofing, molded products, linoleum, sealing compounds and allied industries, the purpose of the research will be to further scientific technology to produce better asphalts and to develop new applications.

With the establishment of this center, it is felt that an important partnership between the industry and the laboratories will be maintained, with the laboratories doing the basic research and the sponsoring companies, at a low individual cost, sharing the benefits of a continued thorough scientific attack on fundamental problems common to the industry.

Cornell awards contract for $1,700,000 laboratory

A laboratory for the study of materials and methods of processing them will become the second unit in Cornell University's new engineering development. A $1,700,000 contract for the building has been awarded the White Construction Co., New York City, and construction will begin as soon as conditions permit.

The center will consist of two units —one for materials and the other for processing. The site is on the edge of Cascadilla Gorge.

The laboratories are part of an engineering development program prepared in 1940 which proposes the construction of a building for the School of Civil Engineering on the site of the present Diesel Laboratory and Old Armory, one for Sibley School of Mechanical Engineering on the present site of the School of Industrial and Labor Relations, and another for the School of Electrical Engineering on the site of the houses between the School of Industrial and Labor Relations and Hoy Field.

Olin Hall, housing the School of Chemical and Metallurgical Engineering, was opened in 1942 as the first unit of the development.

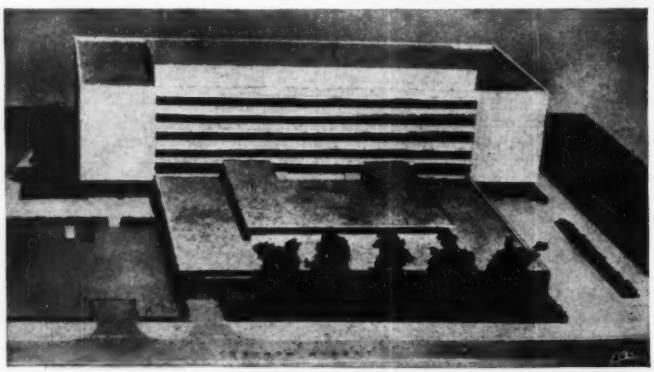
Sloan Fund grant starts industry school at M.I.T.

A gift of $5,250,000 from the Alfred P. Sloan Foundation, Inc., has been made for the establishment of a school of industrial management at the Massachusetts Institute of Technology.

The school is expected to open in the fall of 1952 with an undergraduate enrollment of about 360 and a graduate enrollment of more than one hundred students.

About $2,500,000 will be used for facilities, including housing. The rest will be used for the educational program and its administration at the rate of $275,000 annually.

The institute has also established a school of humanistic and social studies, as President James R. Killian, Jr., says "to give men professional competence and at the same time an insight into the society in which they live and to which, as scientists and engineers, they will have great responsibilities." Prof. John E. Burchard will be dean.



MODEL LIBRARY—Minneapolis is planning a $6,500,000 library of modern design as one main component in the future civic center. Picture shows scale model. Library proper is in rear. Museum of natural history and auditorium are slated for foreground structure. Construction may begin in 1951. (Minneapolis Star photo)

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with the

LULL Shoveloader

Natural SCOOPING ACTION

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LULL SCOOPING ACTION

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The hydraulically controlled bucket of the LULL Shoveloader scoops instead of pushes the earth into the bucket, so it naturally moves more earth in less time.

REACHES FRONT OF LARGE TRUCK BOX—Having the longest reach of any industrial wheel-type tractor loader, the LULL Shoveloader loads to the very front of the truck box from the rear. No special maneuvering is required. No blocking more than one traffic lane. Gives a full truck load every time without pushing dirt forward in box. Loads trucks faster too!

OPERATORS SAY they can really keep trucks moving with a LULL Shoveloader by getting a heaping full bucket every time. No stopping . . . no backing up . . . no lost time. When the forward run has started, pull back both control levers with one hand, and the Shoveloader will automatically tilt the bucket up . . . then start digging. The scooping action of this double control is the most natural digging motion possible. Buckets are filled quickly with one smooth movement. Full buckets mean truck boxes are filled faster. Keep those trucks moving with a LULL Shoveloader!

MORE PROFITS? SURE! With heaping full buckets and faster loading, you move more earth in less time and at less cost. Make your next loader a LULL Shoveloader!

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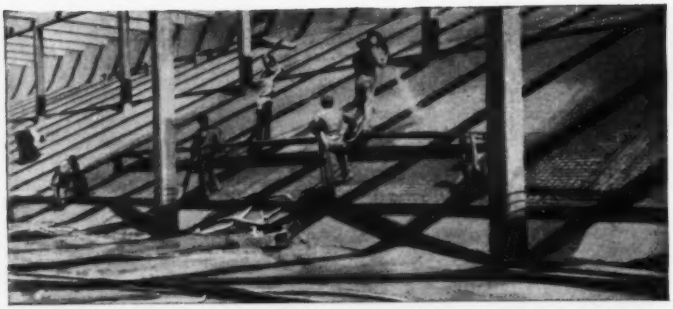

"GUNITE" LINING RESTORES RESERVOIR

When the old, open Ballou Park Reservoir at Danville, Va., was improved and covered in 1948, excessive leakage of the old brick lining was stopped with reinforced "GUNITE." The photo shows details of the process. After concrete columns to support the roof were placed, wire mesh reinforcing was laid and the entire reservoir was "GUNITED." Note that the reinforcing and "GUNITE" were carried over the column footings and up the columns approximately three feet to prevent leaking at those points.

The use of "GUNITE" for repair and construction of reservoirs, bridges, buildings, etc., is illustrated and described in Bulletin A2400. We shall gladly send a copy at your request. On your letterhead, please.

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OBITUARY

Patrick F. Mahoney, 81, retired building contractor and former commissioner of public buildings, Providence, R. I., died in that city Jan. 7. He had been in contracting in Rhode Island for over 50 years.

Rudolph Christoph, 81, who retired a decade ago as an assistant engineer for the Chicago Sanitary District, died Jan. 7.

John H. Brewster, retired sanitation engineer of the New York State Health Department, died Jan. 6 at Lake George, N. Y. He was a graduate of Rensselaer Polytechnic Institute and was employed as a sanitary and chemical engineer by several Albany, N. Y., area firms before joining the department. He was a veteran of both world wars.

A. D. Taylor, 67, of Cleveland, Ohio, who designed the 50-year Capitol Center plan for state buildings in Tallahassee, Fla., and a plan for the city of Tallahassee, died Jan. 8.

Luther M. Downer, 58, a civil engineer for the New York Central Railroad for the last 30 years, died Jan. 10 in Buffalo, N. Y.

Horace W. Gregory, 66, who was a 1906 graduate of Iowa State University, and from 1923 to 1927 chief engineer of the Idaho highway department, died at Missoula, Mont., Jan. 6. For the last 17 years he had been regional manager of Armco Drainage & Metal Products, Inc.

Frank Cameron, 77, retired Army engineer, died at Galveston, Tex., Jan. 8.

Harvey T. Smith, 71, retired assistant superintendent of the California Division of Highways, died Jan. 3 in Vallejo, Calif. He had been with the highway department for more than 30 years before 1946.

Harold I. Eaton, 63, vice-president of Eastern Engineering Co., Atlantic City, N. J., died there Jan. 13. He was a graduate of Massachusetts Institute of Technology. Early in the century he was a resident engineer on the Panama Canal for several years. Later he was with the N. J. Mosquito Extermination Commission.

Gustave J. Slibeck, 70, construction engineer, died in Chicago, Jan. 9. He

(*Continued on page 69*)

started his career in the heavy construction field on the Big Four Railroad on the Hillsboro-Mitchell cutoff. Then he served in the construction department of the Southern Pacific Lines, including work on the Mexico City extension. Later he served with the Missouri Pacific Railroad. Since 1918 he had been with the Pettibone Mulliken Co., where for many years he served as chief engineer.

Oscar Charles Merrill, 76, who as chief engineer of the U. S. Forest service drafted the original Water Power Act of 1920 and was the first executive secretary of the Federal Power Commission, died in Washington, D. C., Jan. 15. He was director of the third World Power Conference held in Washington in 1936. In 1942 he was engineer-economist of the U. S.-Mexico Oil Commission. Later he served for six months as principal engineer of the Army Engineering Board. A civil engineering graduate of M.I.T., he retired Jan. 1, 1943.

Brig. Gen. William Preston Wooten, 77, retired Army Corps of Engineers officer and former editor of "The U. S. Military Engineer," died at Washington, D. C., Dec. 13. During World War I he commanded the 14th Engineer Regiment in France, and in August, 1918, he was appointed chief engineer of the Third Army. At his retirement in 1930 he was in charge of levee construction and flood control work on the lower Mississippi River. (This notice is in correction of an erroneous one that appeared in the Jan. 18 issue.)

Second vehicular tunnel proposed for Boston

A second vehicular tunnel, paralleling the present Sumner Tunnel under Boston Harbor to East Boston was one of the jobs called for in the inaugural address of Gov. Paul A. Dever to the 1951 Massachusetts Legislature. Construction would be through a bond issue.

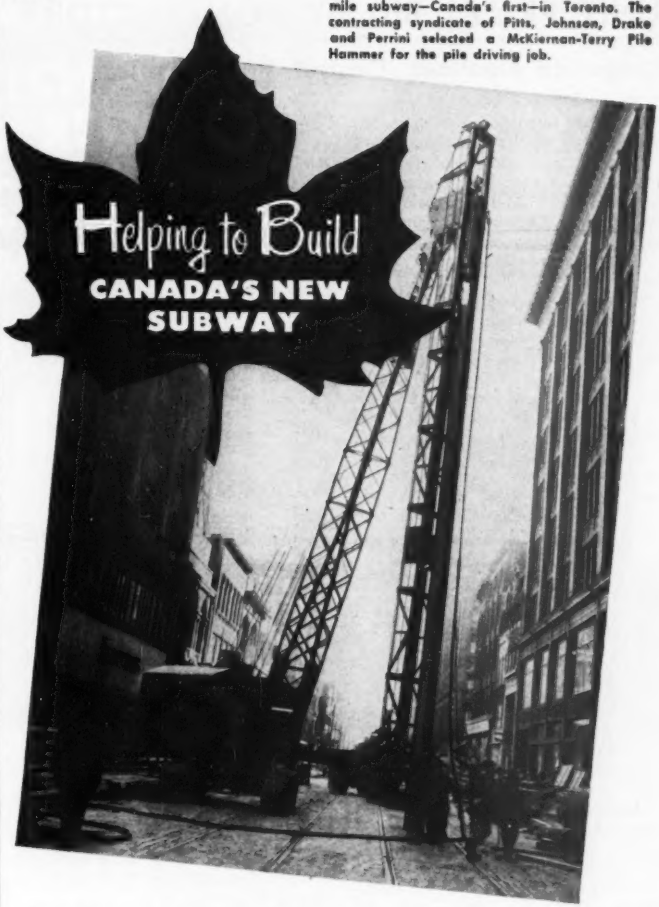
On highways, the governor said:—I shall not this year recommend another $100,000,000 bond issue. The tunnel can serve as a bomb shelter, too.

Construction of the East Boston Expressway and the Boston Central Artery will place a burden on the present one-tube Sumner Tunnel, and authorization should be given the Public Works Department to construct a second tube.

The governor also urged a speeding up of civil defense plans throughout the state.

MK 288

Down go steel piles to help build a new 4½ mile subway—Canada's first—in Toronto. The contracting syndicate of Pitts, Johnson, Drake and Perrini selected a McKiernan-Terry Pile Hammer for the pile driving job.



Toronto's new subway is being built along its busiest thoroughfares, Front and Yonge Streets. To help support the heavy traffic on a temporary street surface, steel soldier piles were driven along both sides of the street by a McKiernan-Terry 9-B-3 Double-Acting Pile Hammer. The 12" x 12" H piles were hammered 20 to 40 feet into the ground with the steam hammer developing 8750 ft-lb at 145 blows per minute. • This is another example of why hundreds of contractors choose McKiernan-Terry Pile Hammers for fast, accurate, economical pile driving.

17 sizes of hammers and extractors are available in the McKiernan-Terry line. Write for bulletin giving all the facts.

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PLANTS: HARRISON, N. J. AND DOVER, N. J.

UNIT PRICES BID BY CONTRACTORS

Irrigation pipelines, Central Valley Project

The low bid at $666,187 was the only bid of ten below the engineer's estimate on earthwork, laterals and sublaterals and structures for the Friant-Kern Canal Distribution System, Calif. It was 1.05% below the estimate and 7.4% below second low bid, 79.3% below high.

The bids were taken Dec. 12, 1950, by the Bureau of Reclamation. The job site is in the Lindmore Irrigation District near Strathmore. The Atchison, Topeka and Santa Fe and Southern Pacific Railroads cross it.

The work, part of the Central Valley Project, involves construction of 52 miles of precast-concrete pipelines including bends and tapers; monolithic-concrete structures for pumping plants, moss screen, turnout transitions, junction boxes and reservoir control; and installation of pumping units, moss screens, valves, meters, miscellaneous equipment and metalwork and electrical control system. Diameter of the pipe ranges from 12 to 72 inches.

All pipe, except expansion joints, flexible connections and contraction joints, and highway and railroad crossings will be furnished by the government. Items furnished by the contractor are indicated with an "f" in the table below. All work must be completed in 500 days. There is a $200 penalty for each day of delay.

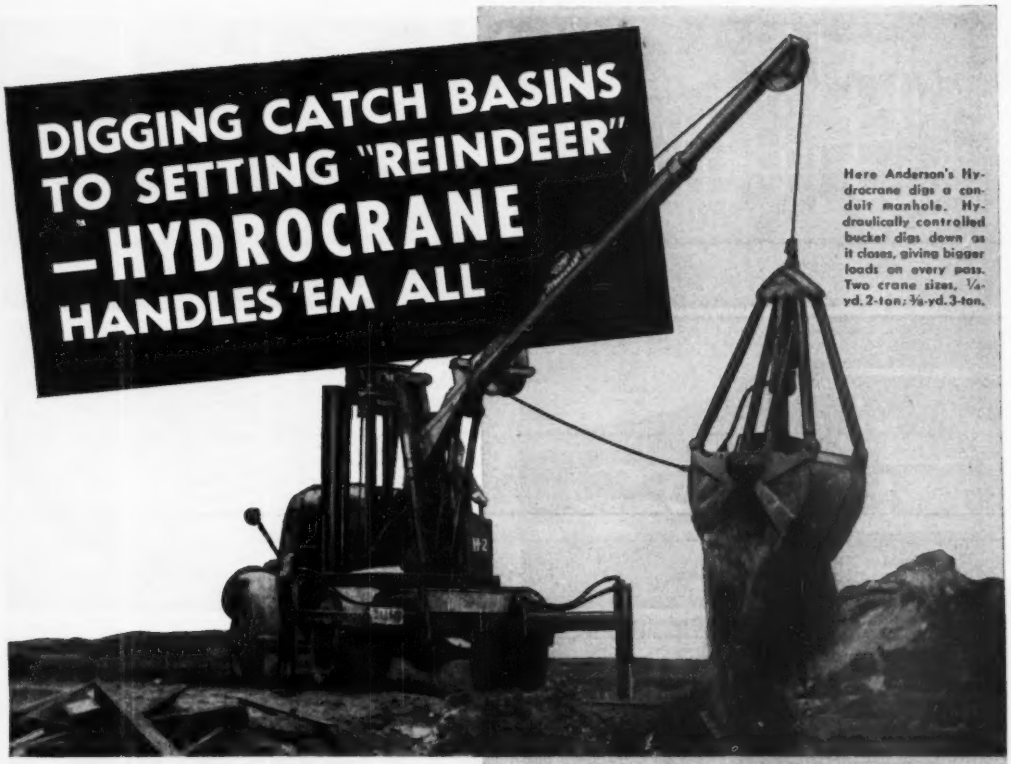
Wages to be paid are: Cement finishers, $2.20 an hour; pipelayers, caulkers and bander, $1.80; plumbers and steamfitters, $2.65; power equipment operators, $1.94-2.59; truck drivers, $1.58-2.04.

Bidders on the job included:

1 Steve P. Rados, Inc., Los Angeles (contract)	$666,187.15
2 Robert Vlacich, Los Angeles	715,223.10
10 Artukovich Bros., Paramount	1,194,634.00
Engineer's estimate	673,209.00

Items	Quantity	Unit prices 1 C	2
Excavation			
Pipe trenches	222,400 cy	$ .35	$ .35
Structures	18,000 cy	.65	.80
Reservoirs	5,100 cy	.45	.40
Backfill in pipe trens	222,400 cy	.14	.20
about struct	15,700 cy	.22	.40
Exc, load, haul, pl consol matl from borw areas	16,300 cy	1.10	1.40
Pudl backfill	3,250 cy	1.15	1.30
Consol backfill	13,000 cy	1.15	1.30
Compact embank	5,000 cy	.75	.40
F & a watr to earth fndn for resv lin'g 1st 300,000 gal	ls	1,500	1,500
over 300,000 gal	Mgal	200	4.00	4.00
Oil surf, rd cros	sy	2,300	.40	3.50
Rubr wate stops in jts 4½" f & p	lf	90	1.00	3.00
6" f & p	lf	100	1.50	3.00
Reinf conc in struc	cy	830	65.00	80.00
Plain conc	cy	350	25.00	35.00
1" elas fill, f & p	sf	100	.50	2.00
Conc, resv lin	cy	690	42.50	36.00
Cmt, f & handl	bbl	2,680	4.40	5.00
Precast-conc bafl plank & cov, f	cy	42	95.00	80.00
Reinf bars in struc, f	lb	119,000	0.12	0.12
Const type-A pipe vents, 18'-less	ea	64	37.00	36.00
18'-27'	ea	66	66.00	45.00
Std conc irrig pipe, 12"	lf	48,690	0.31	0.35
15"	lf	56,320	0.35	0.38
RC pipe, H25P, 12"	lf	17,120	0.35	0.40
15"	lf	17,030	0.40	0.45
18"	lf	21,440	0.45	0.50
21"	lf	10,620	0.50	0.50
12" H50P, H75P, H100P, H125P, H25CP, H50CP, H75CP, H100CP, H125CP	lf	20,130	0.35	0.40
15" H50P, H100P, H25CP, H50CP	lf	9,990	0.40	0.45
18" H50P, H75P, H25CP, H50CP, H75CP	lf	4,190	0.45	0.60
21" H50P, H75P, H100P, H25CP, H75CP, H100CP	lf	6,210	0.50	0.70
24" H25P, H50P, H100P, H125P, H25CP, H50CP, H100CP, H125CP	lf	17,900	0.55	0.75
27" H50P, H125P, H50CP, H125CP	lf	7,730	0.65	0.75
30" H25P, H50P, H125CP	lf	600	0.80	0.75
33" H50P, H50CP	lf	2,370	0.85	0.80
36" H25P, H25CP	lf	320	1.05	1.00
39" H50P, H50CP	lf	3,600	1.25	1.10
42" H50P, H50CP	lf	1,390	1.45	1.40
45" H50P	lf	2,510	1.75	1.60
48" H50P, H50CP	lf	5,280	2.30	1.80
60" H25P, H50P, H25CP, H50CP	lf	3,160	3.60	3.50
72" H25P, H25CP	lf	6,770	4.75	4.00
For RR & hy cros: RCP, st cyl typ, f: 14" H125CCP	lf	250	18.00	11.00
15" H125CCP	lf	150	13.00	12.00
24" H125CCP	lf	390	25.00	16.80
RC culv pipe ex stg, f, 30" H125ECP	lf	130	22.00	24.00
St p cond for con cbl, f & jack, 4"	lf	660	6.50	3.60
RCP, st cyl typ, 24" H125CCP, f	lf	50	40.00	48.00
RC culv p, 30" H125CP, f	lf	50	44.00	48.00
RCP, st cyl typ, f 16" H125CCP	lf	95	21.00	60.00
24" H125CCP	lf	45	25.00	48.00
RC culv pipe ex stg, f 30" H125ECP	lf	45	45.00	60.00
Casing, H25ECP: 42"	lf	45	40.00	48.00
51"	lf	45	50.00	60.00
57"	lf	45	55.00	60.00
St p cond for con cbl, f, 4"	lf	660	6.50	3.00
Oper under AT&SF rr cros		4	300.00	240.00
RCP vert, H25P, 21"	lf	1,700	3.40	3.00
24"	lf	160	3.40	3.00
27"	lf	20	3.50	3.00
30"	lf	760	3.50	3.00
36"	lf	3,250	3.50	3.00
42"	lf	870	4.00	3.60
60"	lf	35	5.00	7.00
12" H50P	lf	280	2.00	1.80
Fab bends, 12"-15" irriga pipe	ea	52	8.00	6.00
RCP, fabr bends, 12, 15, 18, 21" H25P	ea	28	16.00	12.00
H50P	ea	15	18.00	18.00
24, 27, 30, 33, 36" H25P, H50P	ea	4	32.00	24.00
51, 54, 57, 60" H25P, H50P	ea	2	50.00	72.00
12, 15, 18, 21" H75P	ea	16	20.00	12.00
H100P	ea	38	22.00	18.00
H125P	ea	20	22.00	24.00
24, 27, 30, 33, 36" H100P	ea	2	37.00	72.00
H125P	ea	8	40.00	72.00
Fab typ-B gr-I ir pipe tees	ea	136	8.00	7.20
RC p tees, fab typ-B gr-II, H25P	ea	78	18.00	24.00
H50P	ea	10	10.00	24.00
H75P	ea	3	10.00	36.00
H100P	ea	8	10.00	30.00
group-III H25P	ea	9	12.00	120.00
RC step pipe tapr 12 x 18", H25P	ea	18	3.00	24.00
12 x 21", H25P	ea	2	5.00	24.00
12 x 24", H25P	ea	3	10.00	24.00
15 x 21", H25P	ea	5	3.00	36.00
15 x 24", H25P	ea	3	6.00	36.00
18 x 24", H25P	ea	1	10.00	48.00
30 x 54", H25P	ea	1	14.00	60.00
60 x 72", H25P	ea	2	18.00	120.00
33 x 39", H50P	ea	1	14.00	48.00
Mfgd RCP taprs, f & l 15 x 18" H75P	ea	2	90.00	120.00
18 x 21" H75P	ea	2	100.00	132.00
12 x 15" H100P	ea	2	80.00	108.00
21 x 24" H100P	ea	2	115.00	150.00
12 x 14" H125P	ea	6	80.00	108.00
21 x 24" H125P	ea	2	115.00	150.00
24 x 27" H125P	ea	2	130.00	168.00
27 x 30" H125P	ea	2	145.00	180.00
Typ A expan jts, f, in: 12" std conc ir P	ea	37	35.00	42.00
15" std conc ir P	ea	44	40.00	54.00
Typ C in 12" P	ea	37	35.00	36.00
15"	ea	44	40.00	36.00
Type D in 12"	ea	37	35.00	18.00
15"	ea	44	40.00	25.00
Flex conct, f, 12"	ea	140	32.00	24.00
15"	ea	35	37.00	24.00
18"	ea	4	45.00	36.00
21"	ea	3	50.00	36.00
Line-meter tube, head 6"	ea	47	9.00	24.00
8"	ea	23	10.00	30.00
10"	ea	17	10.00	30.00
14"	ea	2	11.00	30.00
Bellmouth gate vlv 8"	ea	312	10.00	12.00
12" (or hub-end)	ea	22	17.00	12.00
16" (or hub-end)	ea	9	35.00	18.00
Slide gate, hoist, f	lb	20,800	.55	.54
Typ-A tee outlet, incl butfly vlv, f: 12" in 18" RCP	ea	5	165.00	120.00
12" in 21" RCP	ea	14	170.00	132.00
12" in 24" RCP	ea	15	175.00	138.00
12" in 27" RCP	ea	13	177.00	144.00
12" in 30" RCP	ea	1	180.00	144.00
12" in 33" RCP	ea	1	185.00	144.00
12" in 42" RCP	ea	2	192.00	156.00
12" in 48" RCP	ea	2	196.00	156.00
12" in 60" RCP	ea	1	215.00	180.00
12" in 72" RCP	ea	3	230.00	180.00
16" in 24" RCP	ea	1	267.00	216.00
16" in 39" RCP	ea	2	275.00	216.00
16" in 45" RCP	ea	1	290.00	216.00
16" in 48" RCP	ea	1	294.00	216.00
16" in 60" RCP	ea	4	312.00	216.00
18" in 30" RCP	ea	1	350.00	324.00
18" in 33" RCP	ea	1	350.00	324.00
18" in 48" RCP	ea	2	375.00	324.00
20' dia manhole, f, in: 24" RCP	ea	1	385.00	600.00
27" RCP	ea	1	388.00	600.00
39" RCP	ea	1	404.00	600.00
42" RCP	ea	1	408.00	600.00
48" RCP	ea	1	415.00	600.00
60" RCP	ea	1	430.00	600.00
72" RCP	ea	1	445.00	600.00
Deflect meter unit: 12"	ea	26	30.00	12.00
15"	ea	10	38.00	12.00
18"	ea	5	45.00	12.00
Venturi tube, meter conct, 30"	ea	1	750.00	360.00
60"	ea	1	760.00	600.00
Watr screen	lb	70,400	0.11	0.96
Elec mtl cond, f, 1" less	lf	890	1.35	1.56
1½-2"	lf	710	2.25	2.64
2½-3"	lf	175	2.85	3.60
Ground wire, f	lb	1,140	1.60	1.92
Elec conductors	lb	1,445	0.30	0.36
Elec control cbl bet resv pl 14	lb	28,000	0.08	0.12
Motr cont, lgt distr cabinets	lb	6,600	0.25	0.30
Pump unit	lb	32,000	0.12	0.12
Hardwr cloth cov, f	lb	740	0.50	3.60
Dif tube, 12"	ea	48	11.00	12.00
Metlwk for junct box struc, f	lb	18,860	0.50	0.60
Chain link fence, f	lf	2,400	3.00	3.60
16' gate	ea	4	210.00	144.00
8' gate	ea	2	130.00	60.00
Misc metlwk, f	lb	34,700	0.32	0.48
Pump manifold, f	lb	15,800	0.55	0.60
Gate, check, air vlv, vlv box, f	lb	11,800	1.10	0.72

DIGGING CATCH BASINS TO SETTING "REINDEER" —HYDROCRANE HANDLES 'EM ALL



Here Anderson's Hydrocrane digs a conduit manhole. Hydraulically controlled bucket digs down as it closes, giving bigger loads on every pass. Two crane sizes, ¼-yd. 2-ton; ⅜-yd. 3-ton.

Although the Robert R. Anderson Co., Chicago, Ill., bought their Bucyrus-Erie Hydrocrane to dig catch basins, this smooth-working hydraulic rig has paid off on dozens of jobs — even to setting a life-sized reindeer and giant Christmas wreath in a city park.

On one 180-unit catch basin job, the crane dug an average of four 125-cu. ft. basins per day, including connections. The crane's telescoping boom and ability to work in close quarters kept the job moving fast.

SURPRISE ON PILE DRIVING

While working on a man hole excavation, this contractor had to drive sheet piling to prevent cave-ins. As an experiment, he attached an 1800-lb. hammer to the Hydrocrane and found it worked excellently on pile driving. This saved renting a friction crane and showed the company a new source of income.

BUCYRUS ERIE HYDROCRANE

SOUTH MILWAUKEE, WISCONSIN

The firm's Hydrocrane also handles complete septic tank jobs — digging, tank setting, backfilling. Other jobs include digging foundations, setting factory machinery and pre-cast pipe, erecting wooden roof trusses and I-beams, and loading pumps and compressors.

Here is a rig that will make money on dozens of jobs you're now passing up — or doing with expensive hand labor.

Get full details. Send the coupon now.

BUCYRUS-ERIE HYDROCRANE DIVISION
SOUTH MILWAUKEE, WISCONSIN

I want to know more about the profit-making Hydrocrane:

Name.....

Company or Dept.....

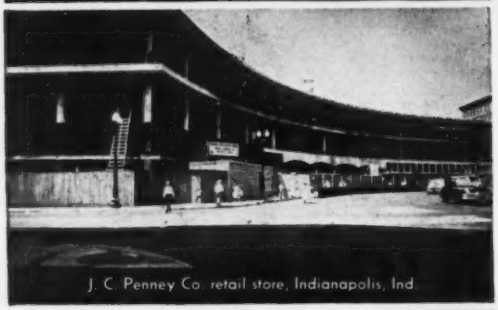
Address.....

City..... State.....

92H81

Factory and salesroom, Olson Rug Co., Chicago

Library, Houston University, Houston, Tex.



J. C. Penney Co. retail store, Indianapolis, Ind.

Marcy apartment houses, Brooklyn, N. Y.

Veterans Administration Hospital, Iowa City, Iowa

State office building, Jackson, Miss.

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Whatever the building size, function or location, you can make important savings in construction costs by using reinforced concrete frames and floors. These savings are possible in buildings of six stories or less as well as in tall structures of all types.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Massachusetts**—B. A. 2/8—U. S. Eng., P. O. Box 2316, Boston, Zone 7, dredging 1,090,000 cu. yd. Boston Harbor, 40 ft. main ship channel, CIVENG 19-016-51-22. New Date. CD 12/29.

† **Rhode Island**—B. A. 2/28—U. S. Eng., P.O. Box 2316, Boston 7, Mass., maintenance dredging Providence River and Harbor, Serial No. CIVENG 19-016-51-29.

LOW BIDDERS—HEAVY CONSTRUCTION

† **Gilbane Building Co.**, 90 Calverly St., Providence, R. I. Low Bidder, $810,700. pier rehabilitation, U. S. Naval Yards and Docks Supply Depot, No. 25230, DAVISVILLE, R. I. Pub. Wks. Office, 495 Summer St., Boston, Mass. Bids Jan. 19. CD 12/8.

Gil Wyner Co., Inc., 12 Newland Ave., Malden, Mass., Low Bidder, Sect. A, $410,000. Sect. B, $672,824, Blackstone Valley Interceptor Sewer, PAWTUCKET, R. I. State of Rhode Island, State House, Providence, R. I. Bids Jan. 10. CD 12/7.

Gilbane Building Co., 90 Calverly St., Providence, R. I. Contract Awarded. $921,919. transit shed, Municipal Wharf, PROVIDENCE, R. I. City, City Hall, Providence, R. I. CD 10/9 under LB.

BIDS ASKED—BUILDINGS

Mass., New Bedford—SCHOOL—B.A. 2/8—City, Supt. Bldgs., Vocational High School addn., alterations, 415 Ash St. $400,000. Plans deposit $50. CD 8/10/50.

LOW BIDDERS—BUILDINGS

Commonwealth of Mass., Dpt. P. Welfare, 600 Washington St., Boston, Mass. rejected bids Nov. 6, INFIRMARY for Massachusetts Hospital School, C-202, CANTON, MASS. L. B. $593,741. CD 11/24, under L.B.

Frankini Constr. Co., 26 Mystic Ave., Medford, Mass. Low Bidder. $758,554. SCHOOL, Warren and Oak Rds., Rds., FRAMINGHAM, MASS. Town, Supt. Schools, Union St., Framingham, Mass. Bids Jan. 18. CD 12/20.

▲ **E. & F. Constr. Co.**, 94 Wells St., Bridgeport, Conn. Low Bidder, $1,286,000, Winchester SCHOOL, Gregory St., NEW HAVEN, CONN. City Bd. Educ., City Hall, New Haven, Conn. Bids Jan. 16. CD 1/5.

CONTRACTS—BUILDINGS

Grainger Constr. Co., 306 Main St., Worcester, Mass. Contract Awarded. parochial SCHOOL and CONVENT E. Main St., MILFORD, MASS. Sacred Heart of Jesus Parish, Milford, Mass. Bids Nov. 15. CD 11/6.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **Pa., Wilkes Barre**—LANDSCAPING—B.A. 2/6—Veterans Admin., Vermont Ave. between H and I Sts. N.W. Wash. 25, D. C., landscaping for Veterans Admin. Hospital, Spec. 5103. Proj. No. 2462.

N. Y., Brooklyn—B.A. 2/7—Dpt P. Wks., Municipal Bldg., New York, Zone 7, Coney Island Sewage Treatment Works, R-15, mechanical work, R-15 E, electrical work, relocation of gas engine generators. Plans deposit $10.

N. Y., Port Richmond—B.A. 2/7—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, PW-101 Port Richmond Sewage Treatment Works, Contr. A, structures and equip Contr. B, electrical work; Contr. C, heating and ventilating; Contr. D, plumbing. Plans deposit $25. Extended date. CD 1/5.

† **D. C., Wash**—B.A. 2/8—U. S. Eng., First and Douglas Sts. N. W., Wash 25, D. C., installing equipment for 6 new filters at Dalecarlia Filter Plant. Extended date. CD 1/10.

N. Y., New York—POWER PLANT—B.A. 2/9—Bd. Transportation, 250 Hudson St., Zone 13, furnishing, fabricating, erecting structural steel for 74th Street Power Plant.

† **Maryland**—B.A. 2/14—At office H. J. Speiman, div. engr. Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va.

Prince Georges Co.—2 rein.-con. bridges 0.439 mi., over Riverdale Rd., box culverts at Carters Creek, Baltimore-Washington Parkway, Proj. 1B2. Plans deposit $10.

LOW BIDDERS—HEAVY CONSTRUCTION

Auf Der Heide-Aragona Inc., 5510-12 Jackson St., West New York, N. J. Low Bidder, $803,300, sewage disposal plant, WEST NEW YORK, N. J. Town, 428 60 St. Bids Jan. 3. CD 12/18.

D. Maionka, 421 16 St., Union City, N. J. Low Bidder, $613,750, sewer pipe line, Contr. 7, WEST NEW YORK, N. J. Town, 428 60 St., West New York, N. J. Bids Jan 3. CD 12/18.

▲ **Thomas, Bennett & Hunter, Inc.**, Westminster, Md. Low Bidder (A) $592,623, (B) $570,354. Grading, drainage, widn., relocation, surf. 3.058 mi. U. S. Rte. 40 between Frederick and Middletown, Contr. F 496-1-615, Frederick Co.***Sam Finley, Inc., 292 North Ave., Atlanta, Ga. (A and B) $250,715. grading, drainage, widn., surf. 2.713 mi. U. S. Rte. 15, south of Frederick, Contr. F 509-1-615, Frederick Co. ***Eastern Highway Corp., Box 2738, Baltimore 25, Md. (B) slag $362,445, (B) stone $396,845. grading, drainage, widn., surf. 3.439 mi. U. S. Rte. 113 between Snow Hill and Newark, Contr. Wo-312-1-115, Worcester Co.***Williams Constr. Co., Middle River, Md. (B) $720,834. c. conc. 0.747 mi. Baltimore-Washington Expressway and surf., grav. service road 2.656 mi., Contr. AA 368-9-538, Anne Arundel Co., MARYLAND. State Rds. Comn., Baltimore 2, Md. Bids Jan. 9. CD 12/19 and 1/4.

John Matricciani & Sons, 409 Caroline St., Baltimore 2, Md. Low Bidder. $572,992. concrete, reinforcing steel Humus Tank 2, Back River Sewage Treatment Works, steel gratings, electrical work, etc., BALTIMORE, MD. City, Bureau Sewers, 312 Municipal Bldg., Baltimore 2, Md. Bids Jan. 17. CD 1/5.

Intercounty Constr. Co., 4720 Baltimore Ave., Hyattsville, Md. Low Bidders. $77,167. Contr. 876 S, 5,435 ft. 10- to 24-in. plain concrete or rein.-con. Wildwood Manor Outfall Sewer, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. Bids Jan. 15. CD 1/11.

John Matricciani & Sons, 409 S. Caroline St., Baltimore, Md. Low Bidder. $157,957. sewage treatment plant addn. for Maryland House of Correction, JESSUP, MD. State, Dpt. P. Imprvts., 506 Park Ave., Baltimore 1, Md. Whitman Requardt & Assoc., 1304 St. Paul St., Baltimore 2, Md., engrs. CD 5/8/50, under Public Bldgs.

CONTRACTS—HEAVY CONSTRUCTION

Cayuga Foundation Corp., 30 Vesey St., New York, N. Y., Contract Awarded, $863,825, Contr. 52, concrete deck for Hackensack River Bridge, Laurel Hill, Hudson Co., NEW JERSEY, New Jersey Turnpike Auth., 65 Prospect St., Trenton, N. J. Bids Dec. 28, awarded Jan. 11. CD 1/4, under LB.

M. & L. Constr. Co., Inc., 108 S. 40 St., Phila., Pa. Contract Awarded. $564,665, est. $500,000. swimming pool and gymnasium addn. at West Chester State Teachers College, WEST CHESTER, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Nov. 29, awarded Jan. 17. CD 12/4, under LB.

BIDS ASKED—BUILDINGS

† **D. C., Wash.**—HEATING PLANT—B.A. 2/6—U. S. Eng., First and Douglas Sts. N. W., Wash 25, D C., reconstr. heating plant in Army Medical Center, between 16 St. and Georgia Ave. near intersection of Alaska Ave. N. W., SERIAL No. ENG 49-080-51-35-(32). Extended date. 1/5.

Pa., Mansfield—DORMITORY—B.A. 2/7—General State Auth., 18 and Herr Sts., Harrisburg, men's dormitory at Mansfield State Teachers College. $500,000. Plans deposit $10. Thomas K. Hendryx, Box 173, Bradford, archt. A. F. Jones, c/o owner, ch. engr. CD 10/27, under LB.

▲ **Pa., State College**—EDUCATION—B.A. 2/7—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating; electrical work Burrows (Educational) Bldg. $1,000,000. Plans deposit $15. Jack S. Steele Co., Phila. Natl. Bank Bldg., Phila., archts. A. F. Jones c/o owner, ch. engr. CD 5/26.

N. Y., East Setauket—SCHOOL—B.A. 2/8—Board Educ., Union Free School Dist. 2, Town of Brookhaven, East Setauket, construct K-9 school, N. Country Rd. between Emma S. Clark Memorial Library Assn. and St. James Roman Catholic Church. Richard Haviland Smythe, 1 E. 53 St., New York, Zone 22, archt. CD 3/17, under LB.

Pa., New Castle—HOSPITAL—B.A. 2/9—Jameson Memorial Hospital, New Castle, 5 story 45x196 ft. bsmnt., steel frame hospital addn. $600,000. W. G. Eckles Co., 719 Lawrence Savings & Trust Bldg., archts. CD 11/30/49.

▲ **Pa., West Middlesex**—SCHOOL—B.A. 2/15—Public School Bldg. Auth., 1400 N. Cameron St., Harrisburg, Consolidated school bldg. for West Middlesex Joint Consolidated School Dist $1,000,000. Plans deposit $30. The Thayer Co., Greer Bldg., New Castle, archt. W. W. Behrens, c/o owner, ch. engr. CD 11/10.

N. J., Camden—WAREHOUSE—Bids Asked—Lewis J. Cowan, archt., 1505 Pine St., Phila., Pa., warehouse for Samuel Schultz 2104 N. Front St., Phila., Pa. $82,000.

N. J., Seaford—AUTO STORAGE—Bids Asked—J. T. Braun, Seaford, auto storage, $82,000.

Pa., Allentown—GARAGE—Bids Asked—Owner c/o Morgan & Berry, archts. 654 Madison Ave., New York, N. Y., postal garage. Approx. $82,000.

LOW BIDDERS—BUILDINGS

Boyd Kline, Bloomsburg, Pa., Low Bidder. $551,970, general constr. women's DORMITORY at Lock Haven State Teachers College, LOCK HAVEN, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Jan. 17. CD 12/22.

G. F. Howard Constr. Co., Inc., Main St. W., Canfield, O. Low Bidder, $896,871, est. approx. $300,000. general constr. JUNIOR-SENIOR HIGH SCHOOL for the Mercer Joint School Dist., MERCER, PA. Public School Building Auth., 1400 N. Cameron St., Harrisburg, Pa. Bids Jan. 18. CD 12/13.

▲ **Deluca-Davis Constr. Co., Inc.**, 103 E. 25 St., Baltimore 18, Md. Low Bidder. $1,690,000. 3 story, bsmnt., sub-bsmnt., 86x150 ft., steel, concrete Peoples Court bldg., Fayette, Gay and Frederick Sts., BALTIMORE, MD. City, Bureau Bldg. Constr., R. E. L. Williams, engr., 410 Municipal Bldg., Baltimore 2, Md. Bids Jan. 17. CD 1/4.

CONTRACTS—BUILDINGS

Pomonok Homes, c/o Stanley Klein, archts., 89-31 161 St., Jamaica, N. Y. Owner Builds. $500,000. 40 HOUSES, Jewel Ave. and 167 St., FLUSHING, N. Y.

Bedford Homes, c/o John Burton & Assoc., archts., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. $500,000. 50 HOUSES, Sayville Rd. and Jericho Turnpike, MINEOLA, N. Y.

Salem Park Homes, c/o Alwin Cassens, Jr., archt., 116-55 Queens Blvd., Forest Hills, N. Y. Owner builds. $500,000. 54 one-family HOUSES, Jerusalem Ave., NORTH MERRICK, N. Y.

Ricciardi Constr. Co., 183 Fourth Ave., East Orange, N. J. Contract Awarded. $906,245. 100 HOUSING units on former Norwood Oval tract Wardel Pl. between High St. and West End Ave., LONG BRANCH, N. J. Long Branch Housing Auth., Garfield Court, Long Branch, N. J. Bids Dec. 15. CD 11/16.

Fred J. Brotherton, 185 Atlantic Ave., Hackensack, N. J., Contract Awarded, $900,000. FACTORY, SOUTH PLAINFIELD, N. J. Ken-Tile Inc., 58 Second Ave., Brooklyn, N. Y. Awarded Jan. 15. CD 1/16.

Ralph Silverio, 733 N. 65 St., Phila., Pa. Separate Contracts. $500,000. RESIDENTIAL development, BALA-CYNWYD, PA.

Stenton Hills, Inc., 6730 Old York Rd., Phila., Pa. Separate Contracts. Approx. $500,000. RESIDENTIAL development, Milton St., PHILA., PA.

McCloskey Co., Liberty and Denny Sts., Pittsburgh, Pa. Contract Awarded. PLANT extension, PITTSBURGH, PA. American Forge & Mfg. Co., 1818 Shore Ave., Pittsburgh, Pa.

† **Stone & Webster Eng. Corp.**, 90 Broad St., New York, N. Y., Contract Awarded, design and construct GENERATOR PLANT addn. at East Pittsburgh Works, PITTSBURGH, PA. Westinghouse Electric Corp., Union Bank Bldg., Pittsburgh, Pa. CD 9/12.

Smith De Corse & Christhilf, 5106 York Rd., Baltimore, Md. Contract Awarded. $85,000. 20x21x100 ft., steel, concrete, masonry WAREHOUSE and OFFICE, 4810 E. Monument St., BALTIMORE, MD. Steel Specialties, Inc., 1003 N. Montford Ave., Baltimore, Md. Bids Oct. 16. CD 10/13/50.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

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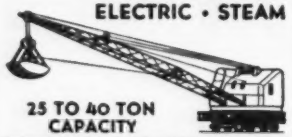

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GROUT HOLES
Tinney Drilling Co.
Grafton, W. Va.

C. Myers Green, Doring, Md. Contract Awarded. 4 story, 90x250 ft., masonry steel distillery WAREHOUSE, COCKEYSVILLE, MD. Cockeysville Distilling Co., Inc., Cockeysville, Md.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **S. C., Charleston**—PIPING, etc.—B.A. 2/6—Bureau Yards and Docks Naval Base, Charleston, S. C., receiving all black steel piping, etc. with copper tubing and brass fixtures and renovating hot and cold water facilities at Naval Receiving Station. NOY 23974. Spec. 26285. Plans deposit $10 each.

La., New Orleans—ADMINISTRATION BLDG.—B.A. 2/7—New Orleans Levee Dist., Royal at Conti Sts., admin. bldg. alterations, repairs at New Orleans Airport. $218,000. Plans deposit $20. Herbert A. Benson & George J. Riehl, Canal Bank Bldg., archts. CD 11/27.

Fla., Opa Locka—B.A 2/8—City, treatment plant addn. Plans deposit $25. Rader Knappen Tippetts Eng. Co., Dupont Bldg., Miami, engr.

Ky., Middletown — B.A. 2/9 — Middletown Water Distributors, water sys. addn., 13,420 ft. 6 and 12 in. pipe, pumps, etc., $150,000. Plans deposit $15. W. H. Lovejoy, 188 Crescent Ave., Louisville, engr.

† **N. C., Camp Lejeune**—VEHICLE STEAM CLEANING, etc.—B.A. 2/12—Pub. Wks. Office, Bldg. 1005, Marine Barracks, Camp Lejeune, vehicle steam cleaning and undercoating facilities at Marine Barracks, Spec. No. 26229. Plans deposit $10.

CONTRACTS—HEAVY CONSTRUCTION

Arnold Wolfe, 1495 Mirabeau Ave., New Orleans, La. Contract Awarded. $689,000. 700,000 cu. yd. common excav., Jefferson Parish, METAIRIE, LA. Fourth Jefferson Drainage Dist., 648 Helois Ave., Metairie, La. Bids Jan. 5. CD 12/18.

Ryan Constr. Corp., 402 Court Bldg., Evansville, Ind. Contract Awarded. $711,109. WW imprvs., OWENSBORO, KY. Owensboro Municipal Utilities, Owensboro, Ky. Bids Oct. 24, awarded Jan. 2. CD 11/1, under L.B.

BIDS ASKED—BUILDINGS

Ga., Decatur—CHURCH—B.A. 2/6—Decatur Presbyterian Church, c/o Bothwell & Nash, archts., 20 Roswell St., Marietta, church. Plans deposit $5.

† **S. C., Charleston**—RECONDITION BLDGS.—B.A. 2/6—Bureau Yards and Docks, Navy Dpt., Naval Base, Charleston, reconditioning various bldgs. and remodeling 18 industrial and storage bldgs. at Naval Shipyard. NOY 24119, Spec. 26415. Plans deposit $10.

La., Mandeville—HOSPITAL—B.A. 2/7—State Div. Admin., Baton Rouge, 52,000 sq. ft. acute hospital and diagnostic unit at Southeast Louisiana State Hospital. Plaans deposit $90. Ricciuti, Stoffle & Assoc., Queen & Crescent Bldg., New Orleans, archts. Extended date. CD 12/12.

N. C., Raleigh—APARTMENTS—B.A. 2/7—Raleigh Housing Auth., Halifax Court, 64 apartments at Chavis Heights; 86 at Halifax Court. Plans deposit $50 each. Wm. H. Dietrick, Inc., 115 W. Morgan St., archt. CD 10/2, under LB.

† **Tenn., Oak Ridge**—LABORATORY—B.A. 2/8—U. S. Atomic Energy Comn., P. O. Box E, Attention, R. J. Dunbar, Engineering Div., Oak Ridge, construct high voltage laboratory Bldg. 18 at Oak Ridge National Laboratory, X-10 area, Inv. No. 401-51-BA. Plans deposit $50. CD 1/7/48.

N. C., Charlotte—HOSPITAL—B.A. 2/9—Charlotte Memorial Hospital Auth., Inc., 1400 Scott Ave. hospital addn., walks, drives, etc. Plans deposit $50 general constr. $35 mechanical work. R. Edwin Wilson, 1370 Briarcreek Rd., archt. CD 7/28.

Va., Fredericksburg—PHYSICAL EDUCATION, etc.—B.A. 2/9—At office Morgan L. Combs, pres. Mary Washington College, Fredericksburg, physical educ. and classroom bldg. for State of Virginia, Richmond. Approx. $500,000. J. Binford Walford & O. Pendleton Wright, 103 E. Cary St., Richmond, archts.

† **Tenn., Oak Ridge**—LABORATORY—B.A. 2/12—U. S. Atomic Energy Comn., P.O. Box E, Attention: R. J. Dunbar, Engineering Div., Oak Ridge, construct K-25 laboratory Bldg. No. K-1,413. Plans deposit $20. CD 8/12/48.

LOW BIDDERS—BUILDINGS

Wm. Muirhead Constr. Co., Inc., Box 2012, Durham, N. C. Low Bidder. $772,900. 80,410 sq. ft. CHEMISTRY BLDG. addn., CHAPEL HILL, N. C. University of North Carolina, Chapel Hill. Bids Jan. 16. CD 12/13.

CONTRACTS—BUILDINGS

▲ **Lucas & Fralin**, 1218 Williamson Rd., Roanoke, Va. Contract Awarded. $1,257,200. Lucy Addison HIGH SCHOOL, ROANOKE, VA. Roanoke City School Bd., 211 Church Ave. S. W., Roanoke, Va. Bids Jan. 10. CD 1/18, under LB.

Southeastern Constr. Co., 301 W. 2 St., Charlotte, N. C. Contract Awarded. $300,000. 48,000 sq. ft. PLANT and OFFICE, CHARLOTTE, N. C. Southern Bearings & Parts Co., Inc., 315 N. College St., Charlotte, N. C.

▲† **John J. Harte Co.**, 284 Techwood Dr. N.W., Atlanta, Ga. Contract Awarded. Approx. $3,000,000. construction work for partial activation of Holston ORDNANCE WORKS, KINGSPORT, TENN. U. S. Eng., P.O. Box 1169, Mobile 7, Ala.

MIDDLE WEST

LOW BIDDERS—HEAVY CONSTRUCTION

Walsh Oil Co., Inc., North Broadway, Joliet, Ill., Low Bidder, $350,000, sewerage sys. in new section, JOLIET, ILL. City, City Hall., Joliet, Ill. H. R. Goodspeed, City Hall, city engr. CD 9/15.

LOW BIDDERS—BUILDINGS

▲† **Gust K. Newburg Constr. Co.**, 2040 North Ashland Ave., Chicago, Ill., Low Bidder $4,647,000, 3,696,000 cu. ft., rein-con. brick, stone regional OFFICE and CLINIC No. 11 for West Side, CHICAGO, ILL. Veterans Admin., Munitions Bldg., Zone 25, Wash., D. C. Bids Jan. 16. CD 11/9.

Bd. Educ., Delavan, Wis., rejected bids Dec. 21, 1 story story E-shaped GRADE SCHOOL, DELAVAN, WIS. CD 1/4, under LB.

CONTRACTS—BUILDINGS

Poirot Constr. Co., 2001 Pershing Rd., Chicago, Zone 9, Ill., Contract Awarded. $600,000. 100,000 sq. ft. steel, brick, concrete WAREHOUSE and OFFICE CHICAGO, ILL. General Electric Co. Lamp Div., 4201 S. Pulaski St., Chicago, 32, Ill. A. Epstein & Son Co., 201 Pershing St., Chicago 9, Ill., archts. Awarded Jan. 9.

O. W. Schneider, Kewaunee, Ill. Contract Awarded $525,000, 2 story, steel, concrete, brick ARMORY, GALVA, ILL. Illinois State Bd., 16 N. LaSalle St., Chicago, Zone 1, Ill. Bids Nov. 29, awarded Jan. 12.

The Austin Co., 510 N. Dearborn St., Chicago, 10, Ill. Contract Awarded. $1,000,000, 160,000 sq. ft., first unit FACTORY, NILES, ILL. Precision Castings, Inc., Grosse Point Road and Howard Ave., Niles, Ill. Awarded Jan. 10. CD 1/11.

Simon Garbulsky, 5622 W. Grace St., Chicago, 32, Ill. Contract Awarded. $300,000. DEPARTMENT STORE, KENOSHA, WIS. S. S. Kresge 5712 6 Ave., Kenosha, Wis. Bids Jan. 2, awarded Jan. 12. CD 1/11.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Missouri**—B.A. On Or About 2/20—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., underseepage control facilities for Agricultural Levee Unit L-550, Areas A to Q inclusive along left bank Missouri River in vicinity of Watson, Atchison Co., CIVENG 25-066-51-82. CD 6/1/44, under Nebraska and Missouri.

† **Montana and Wyoming**—PORTABLE OIL PURIFIER—B.A. 2/20—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Casper and Bonneville, Wyo., Louisville, Mont., portable oil purifier, filter-paper drying oven for Kortes Power Plant, Kortes Unit, Wyo., portable oil purifier and filter-paper drying oven for Boysen Power Plant, Boysen Unit, Wyo., portable oil purifier and filter drying oven for Canyon Ferry Power Plant, Canyon Ferry Unit, Mont., Missouri River Basin Proj., Spec. DS 3297.

† **North Dakota**—B.A. 2/20—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck. Tainter type regulating gates in intake structure, Garrison Dam. CD 6/1/44.

LOW BIDDERS—HEAVY CONSTRUCTION

Panhandle Constr. Co., Lubbock, Tex. Low Bidder, $105,000. certain distr. mains, appurtenances, LUBBOCK, TEX. City, Lubbock, Tex. Bids Jan. 11. CD 1/3.

Kimble Electric Co-operative, Junction, Tex. rejected bids Jan. 3, 135 mi. rural distr. lines, Edwards and Real Counties, TEXAS. CD 10/26.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Tulsa Constr. Co.**, Kennedy Bldg., Tulsa, Okla. Contract Awarded, $1,000,000. natural gas pipe line Helena to Forrest City, ARKANSAS. Arkansas Power & Light Co., Simmons National Bldg., Pine Bluff, Ark.

C. & B. Constr. Co., 821 Central Ave., Hot Springs, Ark. Contract Awarded. $225,000. field house in rear of Hot Springs High School, HOT SPRINGS, ARK. Hot Springs School Bd., Hot Springs, Ark (Correction—contractor.) CD 12/13, under CA.

Etlin E. Peterson, 602 E. 15 St., Casper, Wyo. Contract Awarded. $269,329. four rein.-con. culverts, two concrete, steel bridges over Salt Creek and misc. work on 11.013 mi. Midwest-Casper Rd., FI-220 (6), Natroma Co., WYOMING. Wyoming State Rd. Comn., Cheyenne, Wyo. Bids Jan. 5.

Etlin E. Peterson, Casper, Wyo. Contract Awarded. $67,291, grading, draining 16-23 ft. treated timber spans over North Platte River and misc. work on 0.256 mi. Douglas-Orpho Rd., S-77 (11), Converse Co. ***Forgey Constr. Co. & Townsend Bldg., Casper, Wyo., grading, draining, select material surf. and misc. work 6.032 mi. Midwest Casper Rd., FI-220 (6), Sect. II, Natrona Co.***Taggart Constr. Co., Cody, Wyo. $300,776, grading, draining, selected material surf. and misc. work, 4.981 mi. on Midwest-Casper Rd., FI-220 (6), Sect. I, Natrona Co. WYOMING, State Road Comn., Cheyenne. Bids Jan. 5.

BIDS ASKED—BUILDINGS

† **N. M., Las Cruces**—GARAGES—B.A. About 2/9—U. S. Eng., P. O. Box 1538, Albuquerque, garages for family quarters (NAV-91), White Sands Proving Ground, U. S. Naval Unit, Serial No. Eng 29-005-51-20. Plans deposit $10.

Okla., Muskogee—HIGH SCHOOL—B.A. 2/19—Bd. Educ., Muskogee, Negro High School. $600,000. Plans

deposit $50. Fred Zaroor, Barnes Bldg, Zone 2, archt. CD 4/28.

▲ **Peterson Constr. Co.,** 616 National Bldg., Minneapolis, Minn. Low Bidder. **$1,312,500.** General constr. HOSPITAL and NURSES RESIDENCE, BRECKENRIDGE, MINN. Franciscan Sisters of the Immaculate Conception, Little Falls, Minn. Bids Jan. 16. CD 12/20.

CONTRACTS—BUILDINGS

▲ **United Engineers and Constructors, Inc.,** 1401 Arch St., Phila., Pa. Contract Awarded. Approx. **$4,750,000.** Design and construct REFINERY and CHEMICAL PLANT expansion. TEXAS CITY, TEX. Monsanto Chemical Co., Texas City, Tex. Awarded Jan. 16. CD 4/13.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲† **California**—B.A. 2/15—U. S. Eng., 751 S. Figueroa St., Los Angeles, Tujunga Wash. Imprvt. Bushy Ave. to Hansen Dr., Los Angeles. Eng. 04-353-51-15. $2,000,000.

† **California**—B.A. 2/20—Bureau Reclamation, Dpt. Interior, Bldg. 1-A Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Delano, Calif., traveling water screens, etc., for lateral 124.5E, lateral 124.7E. 130.4E, for Southern San Joaquin Municipal Utility Dist., Unit 3, Friant-Kern Canal Distribution System, Central Valley Proj., Spec. DS-3298. L. N. McClellan, ch. engr.

† **Washington**—RADIAL GATES, etc.—B.A. 2/20—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Quincy, Wash., radial gates for concrete check, Station 2620 plus 50 West Canal, radial-gate hoists for concrete check Station 2620 plus 50, West Canal, Columbia Basin Proj., Spec. DS-396. L. N. McClellan, ch. engr.

† **Washington**—EQUIPMENT—B.A. 3/6—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars Ephrata, Wash., one lot equipment, for Quincy, Ephrata, Moses Lake transmitter-receiver assemblies, receiving equip. for Irrigation Div., Columbia Basin Proj., Spec. DS-3300. L. N. McClellan, ch. engr.

LOW BIDDERS—HEAVY CONSTRUCTION

† **Morrison-Knudsen Co., Inc.** 319 Broadway, Boise, Idaho, and **City Electric & Fixture Co.,** 2014 3 Ave., Seattle 1, Wash. Low Bidder, **$936,316** item 1, **$152,289** item 2, 12 antenna support towers, 13 towers for feeder bus sys., 10 pull-off towers, antenna-lead-in supports, 12 concrete winch platforms, clearing, earthwork, etc., at Jim Creek Navy Communication Station, Spec. 21921, ARLINGTON, WASH. 13th Naval Dist., 1611 W. Wheeler St., Seattle, Wash. Bids Jan. 19. CD 11/28.

BIDS ASKED—BUILDINGS

Calif., Los Angeles—SCHOOL—B.A. 1/31—Los Angeles City Bd. Educ., 1425 S. San Pedro St., 1 story frame, stucco Manhattan Place School, Inglewood. $310,000. W. F. Ruck, 940 S. Figueroa St., Los Angeles, archt.

CONTRACTS—BUILDINGS

Gibbons & Reed Co., 259 W. 3rd South St., Salt Lake City, Utah. Contract Awarded. Approx. **$150,000.** TRUCK TERMINAL WAREHOUSE and OFFICE, SALT LAKE CITY, UTAH. Ringsby Truck Lines, Inc., 120 S. 2nd West St., Salt Lake City, Utah. R. Bruce Folsom, 1593 S. 12 East St., Salt Lake City, Utah.

Howard S. Wright & Co., Inc., 407 Yale Ave. N., Seattle, Wash., and **Henry George & Sons,** Hutton Bldg., Spokane, Wash. Contract Awarded. **$675,000.** 3 story, bsmnt., steel PHONE BLDG. addn., SPOKANE, WASH. Pacific Telephone & Telegraph Co., 2 and Stevens Sts., Spokane, Wash. CD 2/28/49.

▲† **Westinghouse Electric Corp.,** Union Bank Bldg., Pittsburgh, Pa. Contract Awarded. **$2,713,030.** fabrication and installing three 54,000 kw. HYDRO-ELECTRIC GENERATORS in Folsom Power Plant on American River in Central Valley of CALIFORNIA, Proj. DC-3204. Bureau Reclamation, Dpt. Interior, Bldg. 1-A Denver Federal Center, Denver, Colo. Bids Dec. 12. CD 12/21, under LB.

Elmer J. Freethy, 1432 Kearny St., El Cerrito, Calif. Low Bidder. **$819,797.** WASHINGTON SCHOOL and kindergarten, BERKELEY, CALIF. Bd. Educ., Rose and Walnut Sts., Berkeley, Calif. Bids Jan. 11. CD 12/13.

Michaele Grayson, 16101 Victory Blvd., Los Angeles, Calif. Contract Awarded, **$859,400,** 96 frame, stucco DWELLINGS, Topham and Oxnard Sts., LOS ANGELES, CALIF. Grayson Improvement Corp., 1601 Victory Blvd., Los Angeles, Calif.

Stolte, Inc., 8451 San Leandro Blvd., Oakland, Calif. Contract Awarded, **$645,153,** Washington Junior HIGH SCHOOL addns., SALINAS, CALIF. Salinas School Dist., Salinas, Calif. Awarded Jan. 15. CD 1/10, under LB.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska, Eklutna**—B. A. 2/20—Bureau Reclamation, Dpt. Interior, Palmer, drilling water-supply well, Eklutna Govt. Camp, Eklutna Proj. approx. 15 mi. south of Palmer, Spec No. DC-3294.

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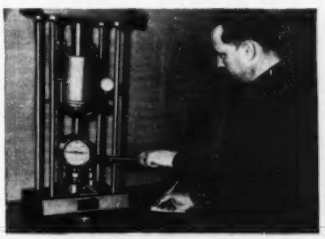

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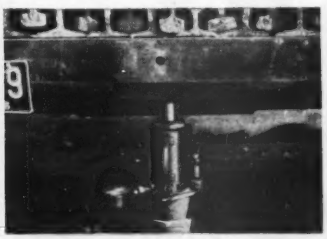
The heart of this testing device is a Blackhawk Gauge-Equipped Hydraulic Jack. It's being used for a penetration test on road-building material. Gauge registers "lbs. total load" exerted.



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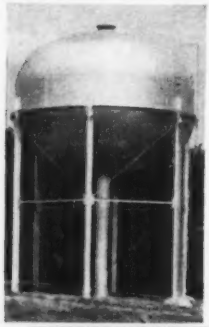

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CANADA

CONTRACTS—HEAVY CONSTRUCTION

Westell Products Ltd., Ave. F. and 22 St., Saskatoon, Sask., Contract Awarded. Approx. $192,123, repairing Air Station, SASKATOON, SASK. Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont.

CONTRACTS—BUILDINGS

▲ **Anglin-Norcross Ltd.**, 892 Sherbrooke St. W., Montreal, Que. Contract Awarded. Approx. $5,889,000, superstructure of BUREAU of STATISTICS BLDG., at Tunney's Park, OTTAWA, ONT. Dpt P. Wks., Hunter Bldg., Ottawa, Ont. Bids Dec. 13 CD 12/27, under LB.

▲ **Morgan Constr. Co.**, Lincoln Square, Worcester, Mass., U.S.A., Contract Awarded, Approx. $10,000,000, STRIP MILL for rolling steel for stainless steel tubing; Canadian General Electric Co. Ltd., 212 King St. W., Toronto, Ont., Approx. $1,600,000, PLANT units, main electrical line, SAULT STE. MARIE, ONT. Algoma Steel Corp. Ltd., 503 Green St., E. Sault Ste. Marie, Ont. CD 12/21/45.

Dalton Eng. & Constr. Co. Ltd., 251 Queen St., E. Toronto, Ont. Contract Awarded. Approx $300,000. brick face, concrete block public SCHOOL, TORONTO, ONT. First Twp. Area of North York, 148 Wilson Ave., Toronto, Ont. Allward & Gouinlock, 57 Bloor St., W. Toronto, Ont. archts.

PROPOSED PROJECTS

WATER SUPPLY

Mo., Kansas City—Wabash R. R. Co., J. C. Bousfield, ch. engr., Railway exchange Bldg., St. Louis, Zone 1, and City of Kansas City, Mo. Water Dept., City Hall, Zone 6, 16 in. water main, 7½ mi. from Kansas City, Mo. WW to site of new Ford Plant (Wabash area), Ravena, $640,000.

Tex., Mesquite—City, bond election Feb. 10, general overhauling WW sys. $200,000; c.i. water distr. lines, $125,000; water supply sys. $150,000. Homer Hunter, 6403 Bob-O-Link Dr., Dallas, consult. engr. CD 12/18.

Alaska, Anchorage—City, City Hall, 11 mi. 6- to 10-in. pipe to serve Eastchester. $564,000. C. Tryck, city engr.

SEWERS, WASTE DISPOSAL

Me., Portland—State, P. Wks. Dpt., G. M. May, comr., City Hall, sewers, Fall Brook, $597,000; sewers Main Ave., $60,000, Dorset St., $11,000.

▲ **N. Y., Syracuse**—City, Eng. Dept., City Hall, sewage treatment plant alterations, addns. $8,727,500.

Tex., Mesquite—City, bond election Feb. 10, sanitary sewer lines, $80,000; sewage disposal plant $125,000. Homer Hunter, 6403 Bob-O-Link Dr., Dallas, consult. engr. CD 12/18.

BRIDGES

▲ **Calif., San Diego**—City Council, Civic Center, Sunset Cliffs Blvd. Bridge. $1,000,000. Neil P. Richards, 1052 W. 6 St., Los Angeles, consult. engr. Alden K. Fogg, c/o owner, engr.

▲ **Calif., San Diego**—San Diego Co. Flood Control Dist., Civic Center, San Diego, Morena Blvd. Bridge. $1,000,000. Donald R. Warren, 500 S. Figueroa St., Los Angeles, consult. engr. J. L. Vincent, c/o owner, engr.

▲ **Michigan**—State Hy. Comm., Lansing, Bay City—rein.-con. steel girder bridge replacing Cass Ave. Bridge. $1,000,000. Harry C. Coons, State Hy. Dpt., Lansing, ch. engr.

▲† **Nebraska**—U.S. Eng., 10 E. 17 St., Kansas City, Mo. Harlan Co.—bridge over Harlan County Dam Reservoir, near Alma. $1,700,000.

Washington—State Hy. Dpt., Olympia, King Co.—2 underpasses across Primary State Hy. 2, Mercer Island, $375,000. W. A. Bugge, state hy. dir.

STREETS AND ROADS

Maine—State P. Wks. Dpt., City Hall, Portland, **Portland**—conc. asphalt Allen Ave., $67,000. conc. asphalt Portland St. exten., $72,000. conc. asphalt Read St., Washington Ave. (Johnsen-Ocean), $60,000.

▲ **Tex., Snyder**—Scurry Co., Edgar Taylor, judge, Court House, road imprvs. and paving, 32 mi. Central Sect.; 30 mi. North Sect.; 32 mi. South Sect.; 33 mi. East Sect.; 30 mi. West Sect. $500,000 each.

EARTHWORK, WATERWAYS

▲ **Idaho**—Washington Water Power Co., W. 825 Trent St., Spokane, Wash., Cabinet Gourge Dam on Clark Fork River, 160 ft. high, 540 ft. tunnels, four 50,000 kv. generators. Approved by Federal Power Commission. $40,000,000. CD 9/39 under Unclassified

▲ **Illinois**—U. S. Eng., 520 Merchandise Mart, Chicago, Zone 54, 5500 ft. channel, paving of trapezoidal

section in Farm Creek, 2000 ft. 22 ft. wide U-frame in Cole Creek, Farm Creek Channel Improvements, East Peoria, Tazewell Co. $500,000.

▲ **Pennsylvania**—Dpt. Forests & Waters, Education Bldg., Harrisburg, Pa., 5 flood control impounding dams on tributaries of West Branch of Susquehanna River, west of Sunbury. $20,000,000.

AIRPORTS

▲† **Calif., Alameda**—RUNWAYS, etc.—Twelfth Naval Dist., Federal Office Bldg., San Francisco, Calif., runways, utilities, seaplane ramps, fuel storage, test cells, mech. repair bldgs., etc. $5,000,000.

▲† **Calif., Crows Landing**—RUNWAYS, etc.—Twelfth Naval Dist., Federal Office Bldg., San Francisco, Calif., runways, parking areas, ammun. storage, fuel storage, utilities, etc. $2,695,000.

▲† **Me., Brunswick**—AIRBASE—Yards & Docks, Navy Dpt., Arlington, Va., reactivating Naval Airbase, $5,500,000.

▲† **Pa., Johnsville**—AIR DEVELOPMENT CENTER—Dpt. Navy, Pub. Wks. Office, Phila. Naval Base, Phila., Naval Air Development Center, runway extens. NOY 23171, Constr. NOY 23190, Spec. 25607. $2,400,000. Capitol Engr. Co., Dillsburg, consult. engr. CD 10/11.

W. Va., Morgantown—AIRPORT IMPRVS., etc.—City, Morgantown, plans by Cass Gilbert, Inc., 342 Madison Ave., New York, N. Y., taxistrips, hangar, water lines and hydrants, 3 story 42x143 ft. administration bldg., $350,000. CD 3/27/47.

LATIN AMERICA

Mexico, Guadalajara—Metalica Industrial, S.A, c/o Luis M. Penichut, Ave. Madero, 373, Guadalajara, Jal. Mexico, plans hydraulic locks factory. $300,000.

Mexico, LaPaz—Gen. Agustin Olachea Aviles, Obregon, 15, LaPaz, B.C. plans olive oil factory. $300,000.

Mexico, Mexico City—Acer Mex. S. A., San Juan de Letran, 21-11th floor, plans bicycle factory. $350,000.

Mexico, Mexico City—Cia. Mexicana de Maquinaria, S. A., Paris, 7, Mexico City, plans deep-well pumps factory. $300,000.

Mexico, Mexico City—Manufacturera General Electric, S. A., San Juan de Letran, 27-15, Mexico City, plans electric refrigerator and water heater factory. $400,000.

Mexico, Mexico City—Refrigeracion y Articulos Metalicos, S. A., V. Carranza, 25-506, Mexico City, plans electric refrigerator factory. $400,000.

Mexico, Mexico City—Productora Ferretera Mexicana, S. A. Madero, 16-1001-03, Mexico City, plans gas heater factory. $300,000.

Mexico, Mexico City—Tuberia Aspe, S. A. 5 de Mayo, 32-218, Mexico City, c/o Fausto Sordo Castanares, plans metal pipe factory. $300,000.

PUBLIC BUILDINGS

Calif., Fresno—SCHOOL—Fresno City Unified School Dist., Fresno, plans by Franklin & Simoson, 752 Fulton St., Fresno, Birney School, $445,000. CD 7/13.

Calif., Long Beach—SCHOOL—Long Beach City School Dist., 715 Locust Ave., plans by Francis Hensel, 730 E. 3 St., 1 story frame, stucco Florence Bixby School. $500,000.

▲ **Calif., Sacramento** — SCIENCE, etc. — State Div. Architecture, P. Wks. Bldg., plans by Charles F. Dean, 1521 "I" St., Sacramento, three 1 story science bldgs., $800,000; plans by Gordon Stafford, Forum Bldg., Sacramento, 2 story admin. bldg., $870,000; cafeteria, etc. $847,000, all for Sacramento State College. CD 9/13/49.

▲ **Calif., San Jose**—SCHOOL—Alum Rock Union Elementary School Dist., 149 McCrerry Ave., plans by Kress & Gibson, 513 First National Bank Bldg., 2 new schools and Linda Vista, Mayfair and Pala School addns. $1,438,187.

▲ **Calif., South San Francisco**—HIGH SCHOOL—South San Francisco Unified School Dist., South San Francisco, plans by John Lyon Reid, 109 Stevenson St., San Francisco, steel, concrete high school, $1,400,000. CD 11/12/47.

Calif., Yucaipa—SCHOOL—Redlands School Dist., Redlands, plans by H Gimoen, 806 N. Broadway, Santa Ana, Junior High School. $525,000. CD 10/12.

† **Colo., Pueblo**—DEPOT—U. S. Eng., Bldg. 11, Denver Federal Center, Denver, Colo., ordnance depot expansion incl. ammunition operational center and misc. shop bldg., $500,000.

Conn., East Haven—SCHOOL—Town Bd. Educ., Town Hall school, Talmadge Rd. off Short Beach Rd. $670,000. CD 12/15/48.

Ill., Lake Zurich—SCHOOL—School Dist. 125, Route 63, 2 story, bsmnt. high school addn. $750,000, Burnham & Hammond, 53 W. Jackson St., Chicago, Zone 4, consult. engrs.

▲ **Kan., Lake City**—ORDNANCE PLANT—U. S. Eng., Davidson Bldg., Kansas City, Mo., rehabilitation Lake City Ordnance Plant, $4,000,000.

Md., Catonsville—SCHOOL—State, Dpt. P. Imprvts., 506 Park Ave., Baltimore, Zone 1, sketches by David Harrison, 421 St. Paul Pl., Baltimore, nurses school, Spring Grove State Hospital. $500,000. Garrett O. Billmire, 506 Park Ave., Baltimore, Zone 1, ch. engr.

▲ **Mass., New Bedford**—HOUSING—City of New Bedford, Housing Auth., Presidential Heights, revised plans by Kandzi & Frost, 60 State St., Boston, 2 story 300 housing unit Proj. PHA 7-2, $3,000,000. CD 10/12/50.

▲ **Mich., Bay City**—HOUSING—City of Bay City Housing Comn., City Hall, 2 story, bsmnt., 480 brick housing unit Proj. FPHA, $4,500,000.

▲ **Mich., Detroit** — BUSINESS — City, County Bldg. Auth., Mayor Cobo, City Hall, plans by Harley, Ellington & Day, Inc., 153 E. Elizabeth St., bsmnt., sub-bsmnt., brick, steel, concrete business bldg., incl. bomb shelter. $16,000,000. CD 2/20/50.

▲ **Mich., Detroit**—HOSPITAL—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, brick, steel, concrete, Psychiatric Institute Hospital. $2,000,000.

Mich., Ionia—HOSPITAL—State, A. N. Landius, dir. State Bldg., Dpt., Lansing, brick, steel, concrete Ionia State Hospital for criminally insane. $979,000.

▲ **Mich., Kalamazoo**—HOSPITAL—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, brick, steel, concrete Kalamazoo State Mental Hospital. $1,465,000.

▲ **Mich., Lansing**—POWER PLANT—City, Otto E. Eckert, genl. mgr., brick, steel, concrete municipal power plant addn. to Moores Park Station, $4,500,000. Burns & Roe, Inc., 233 Broadway, New York 7, N. Y., consult. engrs.

▲ **Mich., Lapeer**—HOSPITAL—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, brick, steel Mental Hospital. $2,365,000. CD 1/23/50.

▲ **Mich., Northville**—HOSPITAL—State, A. N. Langius, dir. State Bldg. Dpt., 115 State Office Bldg., Lansing, brick, steel, concrete hospital for mental patients, $9,300,000. CD 5/8/48.

▲ **Mich., Pontiac**—HOSPITAL—State, A. N. Langius, dir. State Bldg. Dpt., brick, steel, concrete Pontiac State Mental Hospital. $1,388,000. 6/30/47.

▲ **Mich., Traverse City** — HOSPITAL — State, A. N. Langius, dir. State Bldg. Dpt., Lansing, brick, steel Traverse City Hospital (Mental). $1,020,000.

▲ **Mich., Ypsilanti**—HOSPITAL—State, A. N. Langius, dir. State Bldg. Dpt., 115 State Office Bldg., Lansing, brick, steel, concrete State Mental Hospital, $1,186,000.

Neb., Ogallala—HOSPITAL—City, plans by Frank McNett, Grand Island, hospital. $400,000.

N. J., Atlantic City—SCHOOL—Bd. Educ., 1809 Pacific St., West Side School, $400,000.

▲ **N. J., Irvington**—SCHOOL—Bd. Educ., 1254 Clinton Ave., plans by D. A. Hopper, 1000 Springfield Ave., Irvington High School addn. $1,800,000. CD 8/8.

▲ **N. J., Newark**—WAREHOUSE, etc.—Port of New York Authority, 111 8 Ave., New York 11, N. Y., 1 story 107,200 ft. storage warehouse on south side of Newark Channel, $1,000,000; oil storage facility, tanks, on 10 acre site on south side of Newark Channel, $2,000,000.

▲ **N. C., New Bern**—SCHOOLS—Craven County Bd. Educ., C. A. Seifert, New Bern, voted bonds, city and county schools. $2,000,000. CD 10/27.

Pa., Donora—HOUSING—Washington County Housing Auth., Washington, plans by J. Kenneth Myers-J. F. Triggs, 524 Fourth Ave., Pittsburgh, 2 story 110 family brick veneer housing. $775,000.

Pa., Fredericktown — HOUSING — Washington County Housing Auth., Washington, plans by J. Kenneth Myers, 524 Fourth Ave., Pittsburgh, 2 story bsmnt., 70 family brick veneer housing. $550,000.

▲† **Pa., Letterkenney**—MAINTENANCE SHOP—Dpt. of Army, 121 N. Broad St., Phila., maintenance shop. $3,440,000.

▲† **Pa., New Cumberland**—ADMINISTRATION, etc.—Dpt. of Army, 121 N. Broad St., Phila., administration bldg. $980,000; boiler plant. $650,000.

▲† **Pa., Phila.** — BUILDING ALTERATIONS — Dpt. of Army, 121 N. Broad St., Penn A. C. bldg. alterations to be occupied by Army Signal Corps. $1,500,000.

Pa., Sagerstown—HIGH SCHOOL—School Dist. of Area 5, Crawford Co., Sagerstown, plans by Phillips & Haaos, 321 Monroe St., Buffalo, N. Y., Junior-Senior high school. $500,000.

▲ **R. I., Johnston**—HIGH SCHOOL—Town Supt. of Schools, 80 Grenville Ave., brick, steel, concrete Junior High School. $1,435,000. CD 8/17/44.

▲ **Tenn., Tullahoma** — HOUSING — Tullahoma Housing Auth., c/o Bianculli, Palm & Purnell, archts., 501 Cherry St., Chattanooga, 200 housing units. Approx. $1,500,000. CD 10/9.

Tex., Austin — CITY HALL — City, plans by Giesecke, Kuchne & Brooks, consult. archts., 121 8th St., city hall addn., $500,000. CD 11/16.

Tex., Brownsville—CIVIC CENTER—City, civic center, $800,000. Sigler, Clark & Winston, Weslaco, consult. engrs. CD 12/18.

Tex., San Antonio—MUNICIPAL CENTER—City, City Hall, Military Plaza, Municipal Center, incl. health center, on 3½ acre tract of Old River Channel, $400,000. W. W. Toxey, city engr.

▲ **Tex., Waco**—HOUSING—Waco Housing Auth., Waco, plans by Wm. McPherson, Box 2371, 300 brick housing units, concrete slab fdn., $2,872,000. R. Marvin Shipman, 140 W. Olmos Dr., San Antonio, consult. engr. CD 7/31.

▲ **Va., Alexandria**—HIGH SCHOOL—City, City Hall, high school. $1,100,000. CD 5/16/45.

Va., Alexandria—POLICE STATION—City, City Hall, police station. $500,000.

Va., Harrisonburg — HIGH SCHOOL — Rockingham Co., Harrisonburg, plans by Dixon & Norman, 1103 E. Main St., Richmond, Consolidated High School. $800,000.

▲† **Wash., Fort Lewis**—HEADQUARTERS, etc.—Dpt. Army, Pentagon Bldg., Wash., D. C., headquarters bldg., $338,000, warehouses $2,440,000 at Mount Rainier Ordnance depot.

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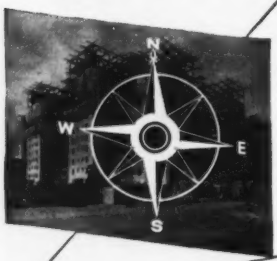

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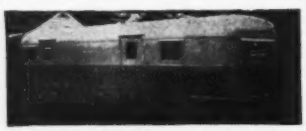

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▲† **Wash., Fort Lewis**—TEMPORARY MOBILIZATION—Dpt. Army, Pentagon Bldg., Wash., D. C., temporary mobilization expansion of North Fort Lewis, $4,000,000.

▲ **Wash., Puyallup**—SCHOOL—School Bd., Puyallup junior high school, $1,500,000.

▲† **Wash., Tacoma**—QUARTERS, etc.—Dpt. Army, Pentagon Bldg., Wash., D. C., NCO quarters, $375,000, two 165-main barracks, $1,032,000 at Madigan Army hospital.

▲† **Wash., Yakima**—CAMP—Dpt. Army, Pentagon Bldg., Wash., D. C., constr. 6,000-man camp at Yakima firing center, $5,340,000.

Alta., Edmonton—ENGINEERING, etc.—University of Alberta, Edmonton, plans by Rule, Wynn & Rule, 11422 Jasper Ave., 50,000, sq. ft. place for engineering bldg. $750,000; plans by Dewar, Cawston & Stevenson, 618 Northern Hardward Bldg., 52,000 sq. ft., biological science bldg., $850,000. CD 7/13.

▲ **Ont., Toronto**—MANUFACTURING—Canadian Arsenals Ltd., Hunter Bldg., Ottawa, electronics mfg. bldg. for government arsenals organization, $2,000,000.

▲ **Ont., Toronto**—COLLEGE—Defence Constr. Ltd., Ottawa, Ont., R.C.A.F. Staff College Building, Avenue Road, Armour Heights. Approx. $3,000,000.

▲ **Que., Granby**—HOSPITAL—Reverend Sisters of St. Hyacinthe, St. Hyacinthe, 200-bed hospital, $1,500,000.

COMMERCIAL BUILDINGS

Ark., West Memphis—APARTMENT—J. W. Rich, West Memphis, eleven 2 story 44-unit apartments, $400,000.

▲ **Calif., Los Angeles**—OFFICE—Southern California Gas Co., 810 S. Flower St., plans by Lunden, Hayward, O'Connor, 510 S. Spring St., 13 story office. Approx. $1,000,000.

▲ **Calif., Santa Cruz**—SEMINARY, etc.—Oblates of St. Joseph, Santa Cruz, plans by Clarence C. Cuff, 1315 Q St., Sacramento, concrete, frame, stucco seminary and church, $1,000,000.

▲ **Conn., Hamden**—STORE, etc.—Sears, Roebuck Co., Brookline Ave., Boston, Mass., store and warehouse, Dixwell Ave. and Ski St. $2,000,000.

▲ **Ill., Chicago**—HOSPITAL ADDN.—University of Chicago, Billings Hospital Campus, plans by Schmidt, Garden & Erikson, 104 S. Michigan St., Chicago, Zone 3, hospital addn., $1,000,000.

Ill., Evanston—HOSPITAL ADDN.— Evanston Community Hospital, 3026 Brown Ave., plans by Burnham & Hammond, 53 W. Jackson St., Chicago, Zone 4, hospital addn. $600,000. CD 8/8/45.

▲ **Ill., Evanston**—AUDITORIUM, etc.— Northwestern University, 619 Clark St., plans by Holabird & Root Burgee, 180 N. Wabash St., Chicago, Zone 1, 3 story, 180x325 ft., 62 ft. high stone, auditorium and sports center to be named McGaw Memorial Hall, adjacent to Dyche Stadium, $1,225,000. CD 12/6/49.

▲ **Ind., Speedway City**—OFFICE—Allison Div., General Motors Corp., General Motors Bldg., Detroit, Mich., plans by Allan & Kelley, 435 Architects & Builders Bldg., Indianapolis, 3 story, 200x400 ft., rein.-con. office. $1,200,000. CD 11/28.

Md., Baltimore—RESIDENCES—The Fenwick Corp. of Baltimore, 11 E. Fayette St., Zone 2, plans by Lawrence A. Menefee, 347 N. Charles St., Zone 2, fourteen 16x33x27 ft., sixty-seven 16x28x27 ft., 2 story, bsmnt., brick row type residences, 3600 block Ramona Ave., and 3800 and 3900 blocks Shannon Dr., $648,000.

Mass., Melrose— HOSPITAL — Melrose Hospital, 565 Lebanon St., plans by Valtz & Kimberly, 120 S. Common St., Lynn, surgical unit and alterations to existing bldg., Lebanon St., $600,000. R. G. Vanderweil, 9 Newbury St., Boston, consult. engr.

N. Y., Brooklyn—APARTMENT—Gilbert E. Levine, 1413 Pitkin Ave., Zone 33, plans by Kavy & Kavovitt, 44 Court St., Zone 2, 6 story apartment for 96 families, 180 E. 17 St. $750,000.

▲ **O., Cleveland**—HOUSING—Wm. Magazine, c/o Standard Constr. Co., consult. engr. and archt., 1010 Vermont Ave. N. W. Wash., D. C., 750 suite housing project on 60 acre parcel. incl. playgrounds, off-street parking facilities. $6,000,000.

▲ **O., Parma**—APARTMENT—Albert A. Levin, Natl. City Bank Bldg., Cleveland, plans by Michael G. Boccia, Osborn Bldg., Cleveland, 2 story 600 unit, brick, frame apartments house. $3,000,000.

O., Youngstown—Y. M. C. A. BLDG.—Young Mens Christian Assoc., N. Champion St., Zone 3, plans by Damon, Worley, Samuels & Assoc., 217 Indianola Ave., remodelling and construction program at Y. M. C. A. bldg. $750,000. CD 5/13/49.

▲ **Ore., Salem**—MATERNITY WING — Salem General Hospital, Salem, plans by James L. Payne, Salem, 5 story 45x200 ft. rein.-con. maternity wing. $1,000,000.

Pa., Ardmore—CLUB—Young Mens Christian Assoc., 1421 Arch St., Phila., plans by J. Bedford Wooley, 1935 Chestnut St., Phila., Y.M.C.A. club bldg. $500,000. CD 12/6/45.

Pa., Coatesville—HOSPITAL—Coatesville Hospital, 300 Strode Ave., plans by Laurie & Green, 321 N. Front St., Harrisburg, hospital addn. $500,000.

▲ **Pa., Pittsburgh**— OFFICE — Blaw-Knox Co., 317 Penn Ave., plans by Hunting, Larsen & Dunnells, Inc., Century Bldg., 3 story bsmnt., 60,000 sq. ft. steel and rein.-con., brick and concrete industrial office bldg. $1,000,000.

Pa., Sewickley—HOSPITAL—Sewickley Valley Hospital, Sewickley, plans by Schmidt, Garden & Erikson, 104 S. Michigan St., Chicago, Ill., brick hospital addn. $750,000.

S. C., North Charleston—CHURCH—First Baptist Church, Rivers Ave., church. $500,000.

Tex., Bellaire—DWELLINGS—Faulkner Building Co., West Bldg., Houston, plans by Knostman & Webster, 2017 W. Gray St., Houston, Group 1, 24 brick dwellings, concrete slab fdn. Post Oak Ct. $300,000; Group 2, 48 cedar shake, brick exterior dwellings, concrete slab fdn. area of Post Oak Rd. and Elm St., $576,000.

Tex., Bellaire—DWELLINGS—R. H. Mitchell, 161 Old Spanish Trail, Houston, 35 cedar shakes, frame, masonry dwellings. $425,000.

▲ **Tex., Bellaire**—DWELLINGS—Taylor Building Co., Bellaire, Proj. 1, 50 dwellings, $675,000; Proj. 2, 49 dwellings, $750,000, frame, cedar shake, masonry constr.

▲ **Tex., Grand Prairie**—HOTEL, etc.—Leo F. Corrigan, 2008 Mercantile Bank Bldg., Dallas, 125 room masonry hotel, N. W. 2nd and Main Sts., $1,000,000; masonry shopping center, $1,000,000; 2 story, masonry mercantile, $300,000.

▲ **Tex., Dallas**—DWELLINGS—W. H. Cothrum & Co., 2116 N. Field St., 75 dwelling units in 2 story frame type bldgs., concrete slab fdn., $525,000; 76 dwelling units on 2 story frame bldgs., concrete slab fdn., $600,000.

▲ **Tex., Dallas**—APARTMENT—L & L Development Co., c/o Harry Hines Blvd., 432 unit apartment on 60 acre tract off Lemmon Ave. $3,024,000.

Tex., San Antonio—DWELLINGS—Wonder Homes, Inc., 505 Majestic Bldg., 80 addnl. frame dwellings, concrete slab fdn., Concord, Future, Savannah, Vaughn and Saxon Sts., $480,000.

Tex., Waco—HOSPITAL—Hillcrest Memorial Hospital, 3000 Herring St., plans by Walter Cocke, Jr. & Co., 1507 Franklin St., 100-bed hospital addn. $850,000. Frank T. Drought, 117 W. Pecan St., San Antonio, consult. engr. CD 2/2/50.

Alta., Edmonton—OFFICE—The Royal Trust Co., 10039 Jasper Ave., Edmonton, plans by Dewar, Couston & Stevenson, 618 Northern Hardware Bldg., Edmonton, office, Approx. $500,000. CD 6/8.

Ont., London—HOUSES—J. E. MacGregor & Sons, 1227 King St., London, 50 brick-veneer houses on Hale Hy. and Bridges Sts. Approx. $450,000.

INDUSTRIAL BUILDINGS

▲ **Ala., Selma**—PLANT—Independent Lock Co., c/o G. A. Johnson, archt., 290 Main St., Worcester, Mass., mfg. plant. $1,000,000. CD 10/26.

Calif., San Leandro—WAREHOUSE—Republic Supply Co. of California 1401 Park Ave., Emeryville, plans by Geo. V. Russell, 3275 Wilshire Blvd., Los Angeles, warehouse, $400,000. CD 12/11.

▲ **Conn., Waterford**—STEEL MILL—New England Steel Development Corp., c/o New England Council, Statler bldg., Boston, Mass., certificate of necessity granted, steel mill. $250,000,000.

Ia., Cedar Rapids—PLANT—Dewey & Almy Chemical Co., Cambridge, Mass., branch plant. $300,000.

Ky., Owensboro—PLANT—Elgo Shutter Mfg., Co., 2738 W. Warren St., Detroit, Mich., plans by Sam C. Molloy, Republic Bldg., Louisville, 1 and 2 story, 35,000 sq. ft. mfg. plant, $300,000.

Md., Baltimore—PARKING GARAGE—Norman B. Frost, atty., 723 15 St., N. W., Wash., D. C., plans by Schreier, Patterson & Worland, 1420 K St. N. W., Wash., D. C., 4 story, bsmnt., rein.-con., stone, brick open deck type parking garage, Liberty and Saratoga Sts. $300,000. Beall & LeMay, 1726 M St. N. W., Wash., D. C., struct. engrs.

Mo., Neodesha—PLANT—Independent Plow Co., Neodesha, mfg. plant. $300,000.

N. J., Teterboro—PLANT—Potdevin Machine Co., 1221 38 St., Brooklyn, 18, N. Y., plans by David Boswell, 6 Morningside Lane, Ridgefield Park, mfg. plant, on 6½ acre site, North St. $750,000.

▲ **N. C., Burlington**—PLANT—Frank Ix & Sons Corp., 1441 Broadway, New York, N. Y., textile plant. $1,000,000.

O., Cleveland—WAREHOUSE, etc.—American Radiator & Standard Sanitary Corp., Bessemer Bldg., Pittsburgh, Pa., plans by Wilbur Watson Assoc., 4614 Prospect Ave., 1 story, 185x275 ft. brick, concrete block, steel warehouse and office; 30x198 ft. pipe storage shed. $400,000. CD 5/4.

▲ **O., Columbus**—FACTORY—Shoe Corp. of America, 35 N. 4 St., factory, shoe assembly plant, Innis Rd. between Cleveand Ave. and Three-C Hy. $1,000,000.

▲ **O., Niles**—PLANT—Ohio Edison Co., 47 N. Main St., Akron, steam-electric generating plant on 91-acre site southwest of here and along banks of Mahoning River. $32,200,000. CD 9/8.

▲ **O., Vandalia**—FACTORY—Standard Thomson Corp., J. E. Golob, vice pres.; and gen. mgr., 216 S. Main St., Dayton, 180,000 sq. ft. factory for mfg. auto and aircraft products, on 138 acre tract U. S. Routes 25 and 40, east of here. $1,600,000.

▲ **Pa., Allentown**—FREIGHT YARDS—Central Railroad Co. of Pennsylvania, S. L. Maples, ch. engr., Jersey City Terminal, Jersey City 2, N. J., enlargement, modernization freight yards. $3,500,000.

▲ **Pa., Brackenridge**—MILL—Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh, 1 story steel frame

rolling and hot 3 strip mill. $5,266,000. CD 2/11/49.

▲ **Pa., Monessen**—MILL—Pittsburgh Steel Co., Gulf Bldg., Pittsburgh, Pa., 1 story, steel hot and cold stripping mill and addns. to open hearth and blast furnace. $36,000,000. James Watkins, c/o owner, engr.

Pa., Pittsburgh — SERVICE BLDGS. — Fruehauf Trailer Co., 10940 Harper St., Detroit, Mich., 1 story steel frame, brick service bldgs. $400,000.

Tenn., Fayetteville—WAREHOUSE—General Shoe Corp., 111 7 Ave. N., Nashville, warehouse. $750,000.

Tex., Austin—WAREHOUSE—Schumacher Co., 400 San Antonio St., plans by Giesecke, Kuehne & Brooks, 205 E. 8 St., 45,000 sq. ft. steel frame, masonry, warehouse, precast concrete deck. $300,000.

▲ **Tex., Dallas**—PLANT—Ford Motor Co., 5200 E. Grand St., masonry and steel type const, doubling capacity Motor Assembly Plant. $4,750,000.

Tex., Dallas—PLANT—Stewart Co., 5115 E. Grand St. motor transportation assembly plant, 100 acre tract. $500,000.

Va., Richmond—WAREHOUSE, etc.—Westinghouse Electric Corp., 1108 E. Main St., plans by Carneal & Johnston, Atlantic Life Bldg., warehouse and office. Approx. $300,000.

Wash., Wenatchee—PLANT—Aluminum Co. of America, 2156 Gulf Bldg., Pittsburgh, 19, Pa., aluminum plant, $50,000,000.

▲ **Wis., Milwaukee**—GARAGE—P. S. Investment Co., 2560 N. 32 St., plans by Geo. Zagel & Bros., 424 E. Wells St., Zone 2, 1 story, bsmnt., 200x358 ft., concrete, steel, brick garage. $1,000,000. U.S. Govt. lessee.

▲ **Wis., Milwaukee**—GRAIN ELEVATOR—Jos. Schlitz Brewing Co., 235 W. Galena St., Zone 12, concrete grain elevator, $2,000,000. Brunner, Laws, Gemeny & Odean, 9 S. Clinton St., Chicago, Ill., consult engrs.

▲ **B. C., Vancouver**—PLANT—Canadian Forest Products Ltd., 999 West Pender St., Howe Sound Pulp Mill plant expansion, $10,000,000.

▲ **N. B., St. John**—PLANT—Saint John Sulphite, Ltd., Fairville, N. B., plant. Approx. $20,000,000. CD 10/17/47.

Sask., Prince Albert—DISTILLERY—A. J. E. Hansen, c/o Sheriff's Office, Prince Albert, distillery about 1¼ miles north of here, Approx. $500,000.

UNCLASSIFIED

▲ **Illinois**—NATURAL GAS STORAGE RESERVOIR—Mississippi River Fuel Corp., 407 N. 8 St., St. Louis 1, Mo., development Old Waterloo, Ill. oil field into an underground storage reservoir for natural gas, incl. storing gas under pressure and sealing off wells, vicinity of Waterloo. $1,900,798.

▲ **Kentucky, Louisiana and Indiana** — GAS LINES — Texas Gas Transmission, 423 3 St., Owensboro, Ky., 580 mi. loop line, 580 mi. welded steel pipe, 2 compressor stations, Madison, Ind., Monroe, La., $42,300,000. CD 7/1/48.

Mo., Richmond Heights (St. Louis 17, P. O.)—PARK AND PLAYGROUND—City, City Clk., City Hall, 1330 Big Bend Blvd., Zone 17, defeated bonds Jan. 9, development of city park and two playgrounds, equip., etc., $300,000. CD 11/13.

O., Columbus—STEAM CONDUIT—Dpt. P. Wks., Columbus, 21 in. high pressure steam conduit from Ohio Penitentiary to State Office Bldg. with feeders to Wyandot Bldg. and Statehouse. $310,000.

▲ **South Dakota**—RURAL DISTRIBUTION LINES—East River Electric Power Co-operative, Sioux Falls, rural distr. lines in eastern South Dakota to supply power to 21 different REA co-operatives. $5,959,000. Buell & Winters, 508 Insurance Exchange Bldg., Sioux City, Ia., consult. engrs. CD 2/9.

Texas — RURAL DISTRIBUTION LINES — Grayson-Collin Electric Co-operative, Van Alstyne, rural distr. lines, sys. imprvs., Grayson and Collin Counties. $385,000. Joe E. Ward, 545 Nacol Bldg., Fort Worth, consult. engr. CD 9/11/46.

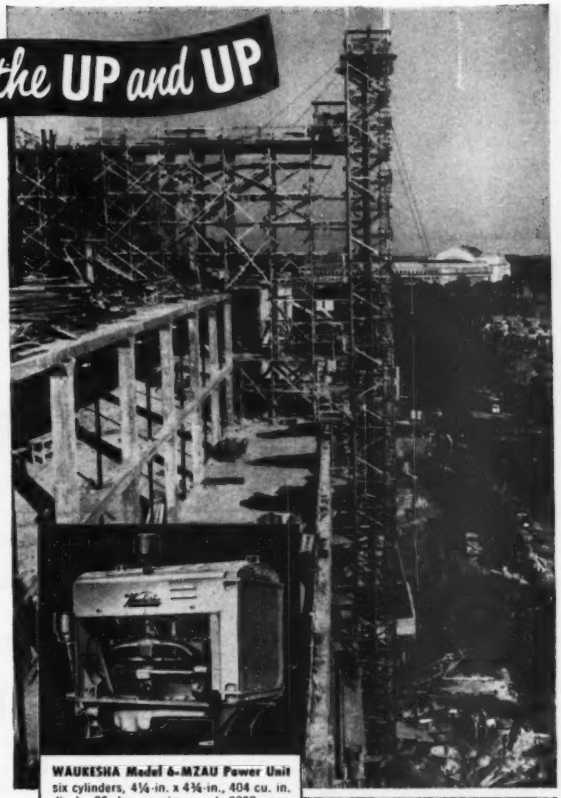
▲ **Tex., Waco**—COLISEUM, etc.—McLennan Co., D. Y. McDaniel, judge, Court House, plans by Harris H. Roberts, 1103 Medical Arts Bldg., Program 1, 750 seating coliseum, $475,000; Program 2, 4-H bldg. and dining hall, $300,000; 4 unit agricultural bldgs. $400,000. Broad & Nelson, 505 N. Erway St., Dallas, assoc. archts. Zeigler Housman & Assoc., 1900 N. St. Paul St., Dallas, consult. engrs. CD 8/14.

Alberta, British Columbia, Idaho and Washington — TRANSMISSION LINES—Alberta Natural Gas Co. Ltd., c/o Clark-Robertson & Connolly, 50 Spark St., Ottawa, Ont., transmission line to Kingsgate, B. C. going thru Idaho and Washington coming north again at Osoyoos, B. C.; transmission lines from Pincher Creek to Vancouver, B. C. by way of the Crow's Nest pass running into the United States from Waneta, B. C.; transmission lines from Edmonton to Vancouver, B. C. by way of the Yellowhead pass with branch to United States from Aldergrove, B. C.

Alta., Edmonton—UNDERGROUND PARKING FACILITIES—Macdonald Parking Services, Ltd., G. F. McClary, 10130 101 Ave., plans by Dewer, Cawston & Stevenson, 618 Northern Hardware Bldg., underground parking facilities in Macdonald Hotel area, Approx. $300,000.

Ont., Hamilton—SWIMMING POOL, etc.—City, Sam Manson, chn. Parks Bd., City Hall, 3 combination swimming pools and artificial ice recreation areas, 35x90 ft. swimming pools, club house, ice cushion, 80x180 ft. $425,000. C. A. Meadows & Assoc., 4 Grange Rd., Toronto, engrs. CD 10/24/49.

on the UP and UP



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● Operating the tower — in the construction of the Government Accounting Building, Washington, D. C. (John McShain, Inc., general contractor)—is a Clyde No. 7268 Hoist with a 10,000 linepull at 200 fpm powered by a 6-MZAU Waukesha Unit. And that accounts for the steady, safe and sure lifting of all the materials on the job with no down time and no delays. Waukesha builds in smooth dependable power with 7-bearing crankshaft, high turbulence combustion chamber, blue flame manifold, full pressure oiling, thermostat and by-pass for quick warm-up, other "top drawer" features. Get Bulletin 1270.

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WAUKESHA

A 109-hole blast without mats!

. . . A **ROCKMASTER "16"** blast, of course

This was tough blasting, all right! Smack in the middle of Bend, Oregon and hemmed in by homes, a fire house, a gas station, and the main building of the hospital to which J. H. Wise & Son, Inc. was building an addition.

In Bend, every small excavation must be blasted out of lava rock—and even small blasts under protective mats have often meant broken windows and a flood of complaints. So, "You'll break every window in town" was the natural reaction to the plan of the sub-contractor, Morrison-Knudson Co., to fire a 109-hole blast.

At the suggestion of the Atlas Sales Representative, the 109 holes were drilled on 4-foot centers, employing a ROCKMASTER "16" pattern using up to the tenth milli-second delay detonator interval. The shot was fired without mats, but not a single window was even rattled.

Local contractors were amazed not only by the lack of noise and vibration and the exceptional control over throw, but by the excellent fragmentation. Perhaps the best testimonial to ROCKMASTER "16" came from a fireman on duty across the street who said he was upstairs at the time and didn't realize the blast had been fired.

This is typical of the results blasters are getting with the ROCKMASTER "16" Blasting System in construction, stripping, mining, and quarrying . . . on the surface and underground. Perhaps, this milli-second delay blasting *system* is the answer to *your* blasting problems. So send for your copy of the ROCKMASTER "16" booklet—it's *free.*

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CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

LOW BIDDERS—BUILDINGS

▲ **City Housing Auth.**, Harrington Ave., Willimantic, Conn., rejected bids Dec. 15, 100 HOUSING UNITS, Harrington Ave., WILLIMANTIC, CONN. LB. $1,094,662. CD 12/29, under LB.

CONTRACTS—BUILDINGS

▲ **E. & F. Constr. Co.**, 94 Wells St., Bridgeport, Conn. Contract Awarded. $1,000,000, NURSES HOME, WATERBURY, CONN. St. Mary's Hospital Corp., 56 Franklin St., Waterbury, Conn. Polack & Sullivan, 1397 Chapel St., New Haven, Conn., archts.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
February 13
Maryland
STREETS AND ROADS

February 13	February 14
New Jersey	New York

▲ **N. J., Trenton**—B.A. About February—City, City Hall, expansion water treatment plant, central head house flanked by 2 filter galleries, each incl. 12 filter units and mixing flocculation and sedimentation basins, $3,400,000. Havens & Emerson, 233 Broadway, New York, N. Y. CD 7/13/49.

New Jersey—B.A. 2/6—New Jersey Turnpike Auth., 65 Prospect St., Trenton, N. J.

Salem Co.—Contract 70, grading, drainage for connecting roads at Rt. 40 adn Rt. 16 interchange, grading, drainage of service area sites Nos. 1N and 1-S, Deepwater. Plans deposit $5. J. E. Greiner Co., 1201 St. Paul St., Baltimore, Md., engr. CD 7/21/49.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **Ell-Dorer Contg. Co.**, 644 Nye Ave., Irvington, N. J. Low Bidder, $1,135,955, constr. Route 4, 25A Sect. 1B from Broad St. to Rt. 21 Viaduct, Newark, Essex Co., NEW JERSEY. State Hy. Dpt., 1035 Parkway Ave., Trenton, N. J. Bids Jan. 23. CD 1/5.

CONTRACTS—HEAVY CONSTRUCTION

Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, N. Y. Contract Awarded. $961,070. 9.31 mi. Lake Ontario State Parkway, Monroe Co., NEW YORK. Bureau Contracts & Accounts, Albany, N. Y. Bids Dec. 13. CD 12/15, under LB.

LOW BIDDERS—BUILDINGS

▲ **General State Authority**, 18 and Herr St., Harrisburg, Pa., rejected bids Jan. 17, two five-unit COTTAGE BUILDINGS and one double cottage type bldg. at Pennsylvania Soldiers Orphan Home, SCOTLAND, PA. LB. $1,232,065, est. $1,200,000. Will readvertise. CD 1/19, under LB.

CONTRACTS—BUILDINGS

▲ **Vermilya-Brown Co., Inc.**, 100 E. 42 St., New York 17, N. Y. Contract Awarded. Approx. $1,500,000. Three COTTAGES to accommodate 180 boys and GYMNASIUM bldg., MT. LORETTO, N. Y. Mission of the Immaculate Virgin. Mt. Loretto, N. Y. Harrison & Abramovitz, 45 Rockefeller Plaza, New York 20, N. Y., archts.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
February 7
Louisiana
STREETS AND ROADS

February 7	February 21
Louisiana	Louisiana

La., Lake Charles—B.A. 2/7—City, c. conc. paving 7 streets and sidewalks.

† **Louisiana**—B.A. 2/8—U. S. Eng., foot of Prytania St., New Orleans, approx. 350,000 cu. yd. uncompacted earthwork on East Atchafayala Basin Levee, St. Mary Parish, Inv. 51-143. CD 6/26/46.

† **South Carolina and Georgia**—OMNIRANGES—B.A. 2/9—Civil Aeronautics Admin., 84 Marietta St. N.W., Atlanta 3, Ga., modification of VHG omniranges at Columbus, S. C., Spartanburg, S. C., Florence, S. C. and Augusta, Ga.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **Alleghany Bldg. Co.**, 801 Bingham St., Pittsburgh, Pa. Low Bidder, $3,300,000, refuse incinerator plant, MIAMI, FLA. City, Miami, Fla. Bids Jan. 17. CD 1/2.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Sumter Builders**, Sumter, S. C. Contract Awarded. $510,000, Sect. 3, rural distr. lines; **Roy Richards Constr. Co.**, Carrollton, Ga., $710,000, completing Pinopolis-Columbia electric lines, etc., SOUTH CAROLINA. Central Electric Power Co-operative, Columbia, S. C. CD 12/13 and 12/20 under LB.

▲ **Boyce Co.**, Clearwater, Fla., Contract Awarded, Approx. $3,500,000, sanitary sewer imprts., PANAMA CITY, FLA. City, Panama City, Fla. CD 11/16/49.

BIDS ASKED—BUILDINGS

Fla., Miami—SCHOOL—B.A. 2/7—Dade Co. Bd. P. Instruction, 275 N. W. 2 St., George Washington Carver School for Colored addn. $500,000. Plans deposit $25. Alfred B. Parker, 2921 S. W. 27 Ave., archt. CD 10/9.

LOW BIDDERS—BUILDINGS

Geo. W. Kane, Durham, N. C. Low Bidder. $912,721. Central High SCHOOL, LEAKSVILLE, N. C. Leaksville Twp. School Bd. Trustees, Leaksville, N. C. CD 1/24.

Harllee-Quattlebaum Constr. Co., Florence, S. C., Low Bidder. $666,000. tuberculosis SANATORIUM, FLORENCE, S. C. Florence-Darlington Hospital Comn., Florence, S. C. Bids About Jan. 17. CD 1/3.

▲ **James E. Caldwell**, Columbia, Miss. Low Bidder. $1,568,500. West Monroe HIGH SCHOOL, WEST MONROE, LA. Ouachita Parish School Bd., Monroe, La. Bids Jan. 17. CD 1/9.

▲ **R. P. Farnsworth Co., Inc.**, 1515 S. Salcedo St., New Orleans, La. Low bidder. $4,991,250. St. Thomas St. housing Proj. LA 1/9. NEW ORLEANS, LA. New Orleans Housing Auth., 500 California Bldg., NEW Orleans, La. Bids Jan. 24. CD 1/16.

† **Robert E. McKee**, General Contractor, Inc., 1918 Texas St., El Paso, Tex. Low Bidder. $900,000. rein.-con. IGLOOS, FORT CAMPBELL, Ky. U. S. Eng., 830 W. Broadway, Louisville, Ky.

▲ **Sullivan & Cezart, Inc.**, 822 W. Kentucky St., Louisville, Ky. Low Bidder. $6,084,000. general constr. SOUTH HOUSING proj. Ky. 1-5. LOUISVILLE, KY. Municipal Housing Comn., 5 and York Sts., Louisville, Ky. Bids Jan. 15. CD 1/2.

▲ **Sauer Co.**, 1183 Essex Ave., Columbus, O. Low Bidder. $1,419,000. Contr. E, plumbing and heating for South Housing Proj. Ky 1-5, LOUISVILLE, KY. Louisville Housing Auth., York St., Louisville, Ky. Bids Jan. 15. CD 1/2.

CONTRACTS—BUILDINGS

Doyle & Russell, Central Natl. Bank Bldg., Richmond, Va. Contract Awarded, $921,965, Westmont Ave. SCHOOL, NORFOLK, VA., City, Norfolk, Va. CD 1/11, under LB.

▲ **Sanderson & Porter**, 52 Williams St., New York, N. Y. Contract Awarded, $20,000,000, design and construct 50,000 kw. electric GENERATING STATION, ALBRIGHT, W. VA. Monongahela Power Co., Watson Bldg., Fairmont, and Potomac Light & Power Co., Hagerstown, Md. CD 10/24.

▲ **Rust Eng. Co.**, Clark Bldg., Pittsburg, Pa. Contract Awarded. Approx. $5,800,000. PAPER PLANT addn., ROANOKE RAPIDS, N. C. Halifax Paper Co., c/o contractor.

▲ **Daniel Constr. Co.**, 429 Main St., Greenville, S. C. Contract Awarded. Approx. $1,500,000. 50,000 sq. ft. HOSIERY MFG. MILL, BELTON, S. C. Fairview Knitting Mills, c/o Wm. G. Lyles, Bissett, Carlisle & Wolff, archts. 1321 Bull St., Columbia, S. C.

Daniel Constr. Co., 429 Main St., Greenville, S. C., Contract Awarded. Approx. $500,000. MILL Addn. McCORMICK, S. C. McCormick Spinning Mills, c/o contractor.

Mion Constr. Co., Techwood Dr., Atlanta, Ga. Contract Awarded. $633,000. Y.M.C.A. recreation bldg., ATLANTA, GA. Y.M.C.A., 145 Luckie St. N.W., Atlanta, Ga

▲ **Fickling & Walker, Macon, Ga.** Contract Awarded, Approx. $1,500,000, construct, manage and finance 200 addnl. HOUSING UNITS to Ignico Apartments, Warner Robins Air Force Base, MACON, GA. Dpt. Air Force, Pentagon Bldg., Wash., D. C.

Brice Bldg. Co., Inc., 1021 2 Ave. N., Birmingham, Ala. Contract Awarded, Approx. $550,000. 5 addnl. stories to 5 story addn. now under construction, BIRMINGHAM, ALA. Liberty National Life Insurance Co., Liberty National Life Bldg., Birmingham, Ala.

▲† **Monsanto Chemical Co.**, 1700 S. 2 St., St. Louis, Mo. Contract Awarded, $5,000,000, design and construct chlorine-caustic PLANT, MUSCLE SHOALS, ALA. Dpt. Army, Pentagon Bldg., Wash., D. C.

▲ **Williams Constr. Co.**, 1032 13 St., Columbus, Ga. Contract Awarded, $1,412,000, Proj. Ala. 5-3, 174 housing units, PHENIX CITY, ALA. Phenix City Housing Auth., Phenix City, Ala. Bids Jan. 16. CD 12/13.

▲ **A. W. Talbert**, Selma, Ala. Contract Awarded, Approx. $1,000,000 lock mfg. PLANT, SELMA, ALA. Independent Lock Co., c/o G. A. Johnson, archt., 290 Main St., Worcester, Mass. CD 1/17.

George J. Glover Co., Whitney Bldg., New Orleans, La. Contract Awarded. $700,000. WAREHOUSE, NEW ORLEANS, LA., D. H. Holmes Co. Ltd., 819 Canal St., New Orleans, La.

▲ **McGraw Constr. Co.**, Middletown, O. Contract Awarded. $15,000,000. slabbing steel MILL, and processing equip. ASHLAND, KY. Armco Steel Corp., Middletown, O. Awarded Jan. 10. CD 9/11.

Hilldale Gardens, Inc., c/o Raymond B. Spencer, archt., First Natl. Bank Bldg., Memphis, Tenn. Owner Builds. Approx. $500,000. 67 HOMES, MEMPHIS, TENN.

D. R. Selley, 409 4 Ave. S., Nashville, Tenn., Contract Awarded. $850,000. 2 SCHOOLS, CLARKSVILLE, TENN., City, City Hall, Clarksville, Tenn. Bids Dec. 20. CD 12/28, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Ind., Fort Wayne—B.A. 2/6—Bd. P. Wks., City Hall, c. conc. repaving Lewis St. from Anthony Blvd. to Clinton St., $190,000; repaving Murray St. from Calhoun to Lafayette Sts., $44,857; paving approaches to new Taylor St. Bridge, $35,000. CD 7/14/44.

Mich., Saginaw—LANDSCAPING—B.A. 2/6—Veterans Admin., Munitions Bldg., Wash 25, D. C., tandscaping for Veterans Admin. Hospital, Spec. 5101, Proj. 2886.

O., Cleveland—STEAM ENGINE GENERATOR—B.A. 2/8—Dpt. P., Welfare, John H. Lamneck, dir., Columbus, steam engine generator set at Cleveland State Hospital.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **State Hy. Comn.**, Indianapolis, Ind., rejected bids Jan. 18, c. conc. widn., bit. resurf. 18.43 mi. Knox and Sullivan Counties, L.B. $662,997; c. conc. and bit. resurf. 17.7 mi. U.S. Rds. 41 and 36, Park Co., L.B. $366,456; c. conc., bit. resurf. 10.44 mi. U.S. Rd. and State Rd. 42, Vigo Co., L.B. $466,855, INDIANA. Will re-advertise. CD 1/4.

Santucci Constr. Co., 5044 Carol St., Skokie, Ill. Low Bidder, $547,619, water lines in south section of city, HAMMOND, IND. City, City Hall, Hammond, Ind. Bids Jan. 3. CD 12/1.

▲ **McCarthy Improvement Co.**, 601-603 Kahl Bldg., Davenport, Ia. Low Bidder, $312,315. bit. resurf. 14.36 mi. U.S. Route 34, Bureau and La Salle Counties***Standard Paving Co., 30 N. LaSalle St., Chicago, 2, Ill., $823,224, c. conc. 4.18 mi. on U.S. Route 40, Clark Co.***J. P. Constr. Co., Gregory Bldg., Chicago Heights, Ill., $382,952, bit. resurf. widn. 3.24 mi. and c. conc. widn. 0.85 mi. on Ill. Route 122, Cook Co.***D. M. Lake Constr. Co., Box 108, Shelbyville, Ill., $871,613, grading 2.77 mi. Ill. Route 713, Fayette Co.***J. C. O'Connor & Sons, Inc., 2104 Miner St., Fort Wayne, 6, Ind., $612,450, c. conc. 5.94 mi. U.S. Route 24, Ford and Livingston Counties***Chicago Heights Coal Co., 27 E. 19 Place, Chicago Heights, Ill., $888,346, c. conc. 7.73 mi. U.S. Route 45, Iroquis and Kankakee Counties***S. M. H. Constr. Co., 1500 N. Adams St., Peoria, Ill., $131,107, c. conc. widn. and paving 5.28 mi. Ill. Route 88 and U.S. Route 150, Peoria Co.***Seneca Petroleum Co., 439 W. 33 St., Chicago, 16, Ill. $108,000 bit. resurf. 5.05 mi. Ill. Route 88 and U.S. Route 150, Peoria Co.***Tritt Bros., Belleville, Ill., $228,196, grading 3.94 mi. Ill Route 840, St. Clair Co., ILLINOIS. State Div. Hys., State Capitol Bldg., Springfield, Ill. Bids Jan. 19. CD 1/5.

▲ **Walter Toebe & Co. and Fry & Kain Co.**, 411 W. Gler St., Lansing, Mich., Low Bidder, $1,270,732, grade separation and bridge over Grand Trunk Western Ry. and Red Cedar River, Proj. U UG X3 of 33-6-1 C1, U BU of 33-6-1 C1 (U UG 146 6), Ingham Co.; **E. Jarvick Constr. Co.**, 18282 Littlefield St., Detroit, Mich., $65,462, pedestrian bridge Tarnow Ave. over Edsel Ford Expressway, Proj. UI B26 of 82-22-10 C1 (UI 391 22), Wayne Co.; **Raff & Dexter**, Lansing, Mich., $89,977, bridge on relocation M 47 over Red Cedar River, Proj. SS B1 of 35-7-9 (S 262 3), Ingham Co., MICHIGAN. State Hy. Comr., Lansing, Mich. Bids Jan. 18. CD 1/4.

CONTRACTS—HEAVY CONSTRUCTION

T. F. Cleghessy, 745 Logan St., Hammond, Ind. Contract Awarded. $850,000, WW addn., filtration plant, water mains and tanks, MICHIGAN CITY, IND. Dpt. Water Works, Michigan City, Ind., Boyd E. Phelps, 1000 Washington St., Michigan City, Ind., engr. Awarded Jan. 10. CD 11/22.

BIDS ASKED—BUILDINGS

Ind., Logansport—STORAGE, REFRIGERATION—B.A. 2/6—State, P. Wks. & Supply Div., W. R. Mybeck, State House, Indianapolis, Zone 4, 1 story 48x181 ft., brick, rein.-con. storage and refrigeration bldg., $300,000. Plans deposit $25. Beiner, Hall & Curran, 607 Broadway, Gary, archts. CD 1/8.

Wis., Madison—ENGINEERING—B.A. 2/6—Bd. Regents University of Wisconsin, Madison, 3 story, 52x110 ft. bsmnt., 110x150 ft., rein.-con. brick engineering bldg. addn. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, engrs. R. C. Kirchhoff, state archt.

Mich., Kalamazoo—POWER PLANT—B.A. 2/7—State, A. N. Langius, dir., State Bldg., Lansing, power plant, generator fdns., piping, insulation, electrical, generator installation, etc. at Kalamazoo State Hospital. Fargo Eng. Co., 120 W. Michigan Ave., Jackson, engr. CD 1/18/50.

O., Akron—HIGH SCHOOL—B.A. 2/7—Bd. Educ., Hazel Fleek, clk., 70 N. Broadway, East High School Bldg. alterations, imprvs., 49 N Martha Ave. Plans deposit $15. Edwin F. Bliss, c/o owner, archt. CD 3/4/49.

Wis., Whitewater—LIBRARY, etc.—B.A. 2/7—Bd. Regents Normal School, Madison, 2½ story, 140x140 ft., rein.-con., steel, brick library-administration bldg. $600,000. Plans deposit $25. R. C. Kirchhoff, state archt. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, archts. CD 11/14.

▲ **Ind., New Albany**—HOSPITAL—B.A. 2/8—Bd. Hospital Trustees, 309 State St., 4 story, 102x268 ft., brick, stone, rein.-con., steel, county memorial hospital, $1,200,000. Hawkins & Walker, Elsby Bldg., archts. CD 3/10.

▲ **Wis., Milwaukee**—ADMINISTRATION-DORMITORY—B.A. 2/9—Milwaukee Co., Court House, 2 and 1 story, H-shaped, 144x209 ft. administration-dormitory

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New York 17, N. Y. • San Francisco 5, Calif.

bldg., $1,000,000. John Messmer, c/o owner, engr. CD 5/24.

O., Junction City—BOILERS—B.A. 2/12—Dpt. P. Welfare, Columbus, repair 2 boilers at Junction City Brick Plant.

Ill., Chicago—PLANT—Bids Asked—Thomas Paper Stock Co., 1500 N. Hooker St., Zone 10, plant. $85,000. Barancik & Conte, 919 N. Michigan St., Zone 11, archts.

SOON LETS CONTRACT—BUILDINGS

▲ **Wis., Milwaukee**—FACTORY—Cutler Hammer Co., 315 N. 12 St., soon lets contract 1 story, bsmnt., 200,000 sq. ft. factory. $1,500,000. Eschweiler & Eschweiler, 724 E. Mason St., Milwaukee, archts.

LOW BIDDERS—BUILDINGS

Harr Verkeler Co., 645 N. Wilbur St., South Bend, Ind., Low Bidd·. $860,000. HIGH SCHOOL, SOUTH BEND, IND. Clay Twp. Bd. Educ., 547 Dixie Hy., South Bend, Ind. Bids Dec. 15. CD 12/4.

CONTRACTS—BUILDINGS

▲ **Rottmayer Constr. Co.**, 63 E. Bartges St., Akron, O. Contract Awarded. Approx. $2,000,000. SHOPPING CENTER, 22 acre tract off Canton Rd. at eastern city limits. AKRON, O. Eastgate Shopping Center, c/o contractor.

▲ **Emil Muller Constr. Co., Inc.**, 911 Commerce Bldg., Rochester, N. Y. Contract Awarded. Approx. $1,250,000 SHOPPING CENTER, Waterloo Rd. between Brown St. and Glenmount Ave., AKRON, O. South Akron Plaza, Inc., c/o contractor.

L. M. Gunderson, Shaker Square, Cleveland, O. Contract Awarded. $640,000, est. $650,000. 3½ story, 95x214 ft. brick garden type APARTMENT, CLEVELAND HEIGHTS, O. Staeger Corp., Hanna Bldg., Cleveland, O. George H. Burrows, Hinman & Gabriel, 1621 Lee Rd., Cleveland Heights, O., archts.

▲ **Paul W. Morris**, 666 E. Dayton Dr., Dayton, O. Owner Builds. Approx. $5,000,000. 175 brick, stone, ranch-type homes on 66-acre tract, David Rd. south of Stroop Rd., DAYTON, O.

Vanetten Bros., 11016 S. Michigan Ave., Chicago, 28, Ill., Contract Awarded, $750,000, CHURCH addn., 8000 S. Wood St., Zone 43, CHICAGO, ILL. Catholic Bishop of Chicago, 720 N. Wabash St., Zone 10, Ill. Barry & Kay, 53 W. Jackson St., Chicago 4, Ill., archts. Awarded Jan. 12.

▲ **A. H. Kerrison**, 2701 E. 106 St., Chicago, 17, Ill., Contract Awarded. Total cost $2,500,000, 15 addnl. w/pute COKE OVENS, CHICAGO, ILL. Wisconsin Steel Co., 11101 S. Torrence St., Zone 17, Ill. Awarded Jan. 10. O. A. Kruger, 180 N. Michigan St., Chicago, 1, Ill., archt.

▲ **I. E. Millstone Constr. Co.**, 4343 Clayton Ave., St. Louis, 10, Mo., Contract Awarded, $3,113,000. 300 HOUSING units administration bldg. addns., alterations, Kirkpatrick Homes Housing Proj. 5-2, GRANITE CITY, ILL. Granite City Housing Auth., Roy Huff, chn., Edwards St. and Maeoki Rd., Granite City, Ill. Bids Dec. 20. CD 1/2, under LB.

Abell Howe Co., 53 W. Jackson St., Chicago, 4, Ill. Contract Awarded, $600,000, FACTORY, MILWAUKEE, WIS. Hotpoint, Inc., affiliate of General Electric Co., 5600 W. Taylor St., Chicago, 44, Ill. Awarded Jan. 8.

Campbell Constr. Co., 3255 Goldner St., Detroit, Mich. Contract Awarded. $500,000 200x250 ft., brick steel 50,000 sq. ft. ENGINEER and RESEARCH LABORATORY for Ferguson Park, 72 acre site on Southfield Rd. in northwest DETROIT, MICH., Harry Ferguson, Inc., Horace D'Angelo, exec. pres., 3639 E. Milwaukee St., Detroit, Mich. T. R. Jahr Assoc., Inc., 21904 Michigan St., Dearborn, Mich., archt.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
WEST OF MISSISSIPPI
STATE HIGHWAY LETTINGS
BRIDGES
February 9
Kansas

STREETS AND ROADS

February 6	February 9
Iowa	Kansas

† **Nebraska-Kansas** — B.A. 2/6 — Bureau Reclamation, Dpt. Interior, Superior, Neb., earthwork and structures, Superior lateral system, laterals 3.7, 4.2, 6.2, 9.5, 12.5, 13.9, 14.9, 15.3, 16.3, 17.5, 18.4, 19.9, 21.2, 21.9, 22.6, 23.7, 27.3, 28.3, 28.9, and 29.3. sublaterals, drains, channel changes, Superior-Courtland Unit, Bostwick Div., Missouri River Basin Proj., near Superior, Neb. Spec. No. DC 3278.

† **Wyoming**—STRUCTURAL STEEL—B.A. 2/6—Bureau Reclamation, Dpt. Interior, P.O. Box 280, Reclamation Center, Casper, furnished structural steel for Sinclair Sub-station, Transmission Div., Missouri River Basin Proj., Spec. 703S-166.

Mo., St. Louis Co.—B.A. 2/7—M. H. Carpenter, Inc., 8025 Forsyth Blvd., Clayton, St. Louis, Zone 24, (selected list bidders) sewerage sys., concrete paving streets in Glasgow Village development, adjacent to Chain-of-Rocks Park on Riverview Dr. from Spring Garden Dr. to mile north of Chambers Rd. $100,000. George W. Kropp, 8025 Forsyth Blvd., Clayton, St. Louis, Zone 24, engr.

† **Colorado and Kansas**—B.A. 2/8—Bureau Reclamation, Dpt. Interior, St. Francis, Kan., test section for embankment protection, St. Francis Unit, Upper Republican Div., Missouri River Basin Proj., at site of Bonny Dam near Hale, Spec. DS-3288. CD 1/10, under LB.

Colorado—RURAL DISTRIBUTION LINES—B.A. 2/8—South East Colorado Power Assn., La Junta, labor only 476 mi. rural distr. lines in Kiowa and Prowley Counties, $650,000. Plans deposit $10. C. H. Guernsey, 2701 N. Oklahoma St., Oklahoma City, 5, Okla., engrs. CD 9/25.

† **Ia., Council Bluffs**—B.A. 2/8—U. S. Eng., 1709 Jackson St., Omaha, Nebr., 29th Street Pumping Station alterations.

† **Nebraska**—VOLTAGE REGULATOR, etc.—B.A. 2/8—Bureau Reclamation, Dpt. Interior, Casper, Wyo., furnishing, del. voltage regulator and switching equip. for Chadron Sub-station, Transmission Div., Missouri River Basin Proj., Spec. No. 703S-167, adv. ENR 2/1.

Oklahoma—RURAL DISTRIBUTION LINES—B.A. 2/8—Central Oklahoma Electric Co-operative, c/o Dick Dillon, Okmulgee, 600 mi. rural distr. lines near Beggs and Henryetta, Okmulgee Co. $550,000. E. R. Taylor & Co., 4107 E. 11 St., Tulsa, engrs.

† **South Dakota**—B.A. About 2/21—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., cemetery relocations for Fort Randall Reservoir Proj., near Lake Andes, Spec. No. CIVENG 25-066-51-75. CD 5/25/44.

Colorado—RURAL DISTRIBUTION LINES—B.A. 2/12—Mountain View Electric Assn., Colorado Springs, Colo., 612.9 mi. rural distr. lines, Douglas, El Paso, Pueblo, Lincoln, Elbert and Washington Counties. $700,000. C-B Eng. Co., 25 S. Grove St., Denver, Colo., engrs. CD 9/28.

† **Tex., Fort Hood**—B.A. 2/12—Dpt. Army, c/o Post Eng., Fort Hood, grading, paving, engineer troop supply yard, Serial No. E-41-093-51-41. Approx. $65,000. CD 8/31.

† **South Dakota**—B.A. 2/13—U. S. Eng., 1709 Jackson St., Omaha, Neb., construction to cut off subsurface water, near Chamberlain, Brule Co., Spec. No. CIVENG 25-066-51-79. CD 1/16.

† **S. D., Rapid City**—WATER WELL—B.A. 2/13—U. S. Eng., 1709 Jackson St., Omaha, Neb., drill deep well 4,600 ft. at Rapid City Air Force Base, near Weaver. CD 1/17.

† **South Dakota**—B.A. 2/14—U. S. Eng., 1709 Jackson St., Omaha, Neb., railroad bridge, Fort Randall Dam Project. Inv. 71, near Chamberlain. CD 12/27.

† **Wyoming**—GROUND WIRES—B.A. 2/14—Bureau Reclamation, Dpt. Interior, Casper, installing overhead ground wires on Seminoe-Cheyenne 115-kilovolt transmission line, Kendrick Proj., near Medicine Bow, Laramie and Cheyenne, Spec. No. DC-3289. Michael W. Straus, comr.; adv. ENR 1/25.

† **N. M., Los Alamos**—B.A. 2/15—U. S. Atomic Energy Comm., c/o Ch. Contract Div., Los Alamos, erosion control program, Inv. No. 291-51-70. $360,000-$480,000. Plans deposit $50.

Tex., Port Lavaca—Bids Asked—Aluminum Co. of America, Port Lavaca, water lines, facilities. $75,000.

Tex., Port Lavaca—Bids Asked—Aluminum Co. of America, Port Lavaca, road and street constr. and paving, $110,000; grading and open drainage, $125,000.

LOW BIDDERS—HEAVY CONSTRUCTION

Bushman Constr. Co., 5 and Felix Sts., St. Joseph, Mo. Contract Awarded. $581,732. Bridges and protection work, 796-A-Alma south, Harlan Co., NEBRASKA. State Dept. Roads and Irrigation Lincoln, Neb. Bids Dec. 21. CD 1/3, under LB.

▲ **Bennett Constr. Co.**, 114 Taylor St., Topeka, Kan. Low Bidder, $2,508,167, general constr. field house proj., incl. armory for University of Kansas***Brune Plumbing, Heating & Electric Co., Lawrence, Kan., $236,755, heating & plumbing contract***Arthur Tucker Electric Co., 619 Jackson St., Topeka, Kan., $75,335, electrical contract, LAWRENCE, KAN. State Bd. Regents, State House, Topeka, Kan. Bids Jan. 17. CD 12/20.

† **J. & J. Constr. Co.**, Petroleum Bldg., Oklahoma City, Okla. Low Bidder, $842,140, constr. Thermopolis-Lowell and Garland-Lowell Transmission Lines, Missouri River Basin Proj. Spec. DC-3267, WYOMING. Bureau Reclamation, Dpt. Interior, Cody, Wyo. Bids Jan. 17. CD 12/28.

BIDS ASKED—BUILDINGS

Minn., Willmar—SCHOOLS—B.A. 2/7—Bd. Educ., Alice C. Hedin, clk., 1 story, 84x284 ft. school; 1 story, 46x250 ft. school addn.; 2 story, 114x146 ft. high school addn. $725,000. Plans deposit $15. Extended date. Magney-Tusler & Setter, 202 Foshay Tower, Minneapolis, archts. Frust & Lofstrom, Willmar, assoc. archts. CD 12/6.

Ia., Ames—SCIENCE—B.A. 2/8—State Bd. Educ., 1007 Des Moines St., Des Moines, science bldg. addn. at Iowa State College. Tinsley, Higgins & Lighter, 526 Liberty Bldg., Des Moines, archts.

Minn., Bloomington (Minneapolis P.O.)—SCHOOL—B.A. 2/8—Bd. Educ., E. B. Chadwick, clk., 1 story, irregular shape school, 102 St. and 2nd Ave. S., $725,000. E. D. Corwin, E. 818 First National Bank Bldg., St. Paul, archt. CD 11/10.

Tex., Lubbock—STUDENT UNION—B.A. 2/9—Texas Technological College, Lubbock, student union bldg, $500,000. Plans deposit $25. Atcheson & Atkinson, 204 Sanford Bldg., archts. CD 12/18.

Tex., Dallas—SCHOOL—B.A. 2/13—Dallas Independent School Dist., Akard and Royal Sts., San Jacinto School. $450,000. Plans deposit $25. Mark Lemmon, 1210½ Main St., archt. CD 10/6.

▲ **Tex., El Paso**—OFFICE—B.A. 2/13—El Paso Natural Gas Co., Bassett Tower, El Paso, 18 story, bsmnt., masonry, steel and concrete frame and fnd., buff colored

limestone exterior office, partial air-conditioning, $3,000,000. Plans deposit $50. Extended date. Kenneth Franzheim, 2306 Crawford St., Houston, and Carroll & Daeuble, 1001 E. Yandell St., archts. CD 1/4.

Tex., Fort Worth—COURT HOUSE—B.A. 2/13—Tarrant Co., Court House, remodeling existing court house and criminal court. $500,000. Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., archt. CD 9/19.

† **Tex., Fort Bliss**—FIRE CONTROL SHOP—B.A. About 2/14—U.S. Eng., P.O. Box 1538, Albuquerque, N. M., fire control shop bldg. addn. (RJG-51-4). Plans deposit $10.

Tex., Houston—PLANT—Bids Asked—Childers Mfg. Co., 625 Yale St., plant. CD 1/5.

▲**Tex. Houston**—SHOPPING CENTER—Bids Asked—Leo F. Corrigan, Mercantile Bank Bldg., Dallas, shopping center, N. Shepherd Dr. $1,000,000. D. P. Walling, 401 Maple St. Houston archt. CD 1/27 under LB.

LOW BIDDERS—BUILDINGS

Bralor Homes Inc., S and Vine Sts., North Little Rock, Ark. Low Bidder, $775,893, erecting HOUSING Proj. Ark 4-7, LITTLE ROCK, ARK. Little Rock Housing Auth., 2800 Battery St., Little Rock, Ark. Bids Jan. 19. CD 1/5.

John W. Larson, Bismarck, N. D. Low Bidder. $539,210, general constr. PENITENTIARY addn., BISMARCK, N. D. State Bd. Admin., Bismarck, N. D.

D. C. Bass & Sons, Bass Bldg., Enid Okla., Zone 1. Low Bidder. $943,221. HOSPITAL addn., ENID, OKLA. St. Mary's Hospital, Enid. Bids Jan. 11. CD 12/20.

▲ **Pan-American Refining Corp.,** Texas City, Tex., received no bids, CHEMICAL PLANT expansion of Panarez unit, TEXAS CITY, TEX. $2,000,000. CD 11/15.

CONTRACTS—BUILDINGS

Kallestad Constr. Co., 1111 Metropolitan Life Bldg., Minneapolis, Minn. Contract Awarded. $537,900. general constr. school, Adair Ave., ROBBINSDALE, MINN. Bd. Educ., F. C. Bayard, clk., Robbinsdale, Minn. Bids Jan. 4. CD 12/14.

Commercial Constr. Co., 1610 Hampton Ave., St. Louis 10, Mo. Contract Awarded. Approx. $750,000 incl. equip., 1 story, 120x500 ft., steel asbestos shingle PLANT on 29 acre site at St. Cyr. and Bellefontaine Rds., Burlington tracks, ST. LOUIS CO., MO. Asbestone Corp., 5372 Tchoupitulas St., New Orleans, La. Walter F. Hellmich, 1610 Hampton Ave., St. Louis 10 Mo., archt.

De Witt Co., Tuloma Bldg., Tulsa, Okla. Contract Awarded, $775,000, erecting TOURIST COURT, LITTLE ROCK, ARK. R. M. Traylor, 205 W. 2 St., Little Rock, Ark. Irvin D. McDaniel, 800 Whittington St., Hot Springs, archt.

Rue Contg. Co., Velva, N. D. Contract Awarded. Approx. $800,000 superstructure for STEAM GENERATING PLANT, VELVA, N. D. Central Electric Power Co-operative, Minot N. D. Bids Aug. 4. CD 8/24 under LB.

Chalmers—Barton Co., Hutchinson, Kan. Contract Awarded. $600,000. second addn. to GRAIN ELEVATOR, 1,250,000 bu. capacity, LINCOLN, NEB. Westcentral Co-operative Grain Co., 409 Grain Exchange, Omaha, Neb.

Hoke Constr. Co., 218 W 9 St., Stillwater, Okla. Contract Awarded. $510,265. CHURCH AUDITORIUM and EDUCATIONAL bldg., STILLWATER, OKLA. First Baptist Church, 701 Duncan St., Stillwater, Okla. Awarded Dec. 12. CD 12/18.

Henger Constr. Co., Dallas Natl. Bank Bldg., Dallas, Tex. Contract Awarded. $875,000. 2 story, 50,000 sq. ft. MERCANTILE bldg. addn. DALLAS, TEX. Nieman-Marcus Co., Main and Ervay Sts., Dallas, Tex. CD 1/8.

Parksdale Heights Realty Co., Lawnview and Scyene Rd. Owner Builds. $565,000 masonry, SHOPPING CENTER units, concrete pier and grade beam fdn., Scyene Rd. and Weatherford St., DALLAS, TEX. CD 1/18.

▲ **Brown & Root, Inc.,** Box 3, Houston, Tex. Contract Awarded. $1,840,000, addnl. CHEMICAL PLANT expansion on 280 acre site on Ship Channel, HOUSTON, Tex. Diamond Alkali Co., 1006 Main St., Houston, Tex. CD 1/17.

Sheffield Steel Corp., Industrial Rd., Houston, Tex. Owner Builds. $975,000, ingot PLANT expansion unit, HOUSTON, TEX. CD 10/24.

Von Frellick, Inc., 800 Denver National Bank Bldg., Denver, Colo. Contract Awarded. $800,000. 2 story, full bsmnt., 125x150 ft. STORE, DENVER, COLO. Robert E. Nicholas & Ernest E. Christensen, c/o Walter H. Simon, archt., 1922 E. 18 Ave., Denver, Colo. Awarded Jan. 11. CD 1/8.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
February 15
California

Calif., Los Angeles—B.A. 2/13—Los Angeles Co. Sanitation Dist. 2, 2020 Beverly Blvd., 10,000 ft. 48 in. rein.-con. pipe, Joint Outfall Sewer E, Unit 1. $200,000. Plans deposit $5. A. M. Rawn, dist. engr.

† **Calif., Moffett Field**—COOLING COILS—B.A. 2/13—National Advisory Com. for Aeronautics, Ames Aeronautical Laboratory, Moffett Field, design, fabricate, install two sets cooling coils for 8 ft. supersonic wind tunnel, under Req. A-5307.

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† **Oregon**—B.A. 2/13—U. S. Eng., 628 Pittcock Block, Portland, Zone 5, clearing Big Cliff Reregulating Dam Reservoir Area on North Santiam River, Serial No. CIVENG 35-026-51-158.

LOW BIDDERS—HEAVY CONSTRUCTION

† **Baldwin Locomotive Works,** Chester Pike and Simpson St., Eddystone, Phila. Pa. Contract Awarded. $853,190, Three 2,500 c.f.s. hydraulic pumps for McNary Dam, Umatilla Co., CIVENG 45-164-51-24. OREGON. U. S. Eng., 19 E. Poplar St., Walla Walla, Wash. Bids Dec. 19. Awarded Jan. 11. CD 12/27 under LB.

† **George Pollock Co.,** P. O. Box 903, Sacramento, Calif. Contract Awarded. $644,190, completion 24-in. pipe turnout, Station 9 plus 75, Delta Cross Channel. Central Valley Proj., Spec. 200C-139, CALIFORNIA. Bureau Reclamation. Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo. Bids Nov. 21, awarded Jan. 11.

Webb & White, 7220½ Melrose St., Los Angeles, Calif. Low Bidder, $902,792, c. conc. and b. conc. rein.-con. overcrossing Hollywood-Santa Ana Freeway between Grand Ave. and Los Angeles St., Los Angeles Co., CALIFORNIA. State Div. Hys., 120 S. Spring St., Los Angeles, Calif. CD 12/27.

V.C.K. Constr. Co., 6124 Ferguson Dr., Los Angeles, Calif., Low Bidder, $707,004, Unit I; $748,771, Unit II***Chas. I. Brown Co. & Paul Vukitch Constr. Co., 6465 Northside Dr., Los Angeles, Calif., Unit III, $763,803*** A. H. Fannilaro, 2720 W. 7 St., Santa Ana, and J. L. McElvany, Box 261, El Centro, Calif., $121,672, Unit IV, all for Magnolia Trunk Sewer Proj., ANAHEIM, CALIF. Orange Co. Joint Outfall Sewer, 204 Center St., Anaheim, Calif. Bids Jan. 9. CD 10/3.

Ben C. Gurwich, Inc., 112 Market St., San Francisco. Contract Awarded. $500,000. 600 ft. long steel sheet pilling with poured concrete seawall, LONG BEACH, CALIF. Spencer Kellogg & Sons, Inc., 305 Henry Ford Ave., Terminal Island, Calif. Bids Oct. 13. CD 10/3.

▲ **J. & P. Artukovitch,** 13305 S. San Pedro St., Los Angeles, Calif. Low Bidder. $2,159,378, 35,000 ft. 60- and 66-in. pipe, Silver Lake Outlet line, LOS ANGELES, CALIF. Los Angeles Dpt. Water & Power, 207 S. Broadway, Los Angeles, Calif. CD 12/28.

Lew Jones Constr. Co., 1535 S. 10 St., San Jose, Calif. and **C. K. Moseman** c/o Chas. MacCloskey Co., 112 Market St., San Francisco, Calif. Low Bidder, $769,000, sewage treatment plant, pumping station and force main, MENLO PARK, CALIF. Menlo Park Sanitary Dist., 450 C St., Menlo Park, Calif. Bids Jan. 15. CD 12/29.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Morrison-Knudsen Co., Inc., and Rumsey & Co.,** Hoge Bldg., Seattle 4, Wash. Contract Awarded. $3,691,400 second-unit of rein.-con. on steel and concrete piling double-deck Alaskan Way viaduct, Seattle, King Co., WASHINGTON. State Hy. Dpt., Olympia, Wash. Bids Jan. 16. CD 1/8.

▲ **Larson Constr. Co.,** Colman Bldg., Seattle, Wash., Contract Awarded. $1,000,000, repair Pier 91 for Military Sea Transportation Service, WASH., SEATTLE, Yards & Docks Annex, Navy Dpt., Arlington, Va. CD 8/29.

† **Steve P. Rados, Inc.,** 2975 San Fernando Rd., Los Angeles, Calif., Contract Awarded, $666,187, earthwork, pipe lines and structures Central Valley Proj., Spec. DC 3236, CALIFORNIA, Bureau Reclamation Dpt. Interior, Lindsay, Calif. Bids Dec. 20, awarded Jan. 9. CD 12/28, under LB.

Barrett & Hilp, 908 Harrison St., San Francisco, Calif. Contract Awarded. $256,013, interceptor lines and force mains; $567,370, 2 sewage pumping and treatment works, MONTEREY, CALIF. City, City Hall, Monterey, Calif. Bids Jan. 16, awarded Jan. 19. CD 12/13.

BIDS ASKED—BUILDINGS

† **Wash., Richland**—ELECTRICAL SUBSTATION—B.A. 2/8—General Electric Co., prime contractor to Atomic Energy Comn. for operation of Hanford Works, Richland, rebuild and enlarging electrical substations. Plans deposit $50.

Ore., Eugene—SCHOOLS—B.A. 2/12—Eugene School Dist., Eugene, 7 school addns. Hamlin & Reynolds, Eugene, archts. CD 9/11/45.

Wash., Seattle—SUB-STATION TRANSFORMERS—B.A. 2/13—P. R. Hendricks, city purch. agt., County-City Bldg., Seattle, Zone 4, four 6,000 kva. sub-station transformers with conversion equipment for expanding substations. E. R. Hoffman, City Light Bldg., city light supt. CD 7/11.

▲ **Calif., Los Angeles**—HEALTH, etc.—B.A. 2/14—City Bd. P. Wks., City Hall, 8 story city health bldg. and receiving hospital, $3,000,000. Extended date. S. E. Lunden, Rowan Bldg., Los Angeles, archt. CD 12/29.

LOW BIDDERS—BUILDINGS

Pacific Coast Builders, 2530 18 St., San Francisco, Calif. Low Bidder, $749,500, general contract Los Guilicos SCHOOL for Girls, SANTA ROSA, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Jan. 16. CD 12/18.

CONTRACTS—BUILDINGS

Elmer J. Freethy, 1432 Kearney St., El Cerrito, Calif. Contract Awarded, $737,944, rein.-con. SCHOOL, BERKELEY, CALIF. Berkeley Unified School Dist., Administration Bldg., Rose and Walnut Sts., Berkeley, Calif. Awarded Jan. 19. CD 1/18, under LB.

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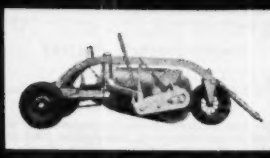

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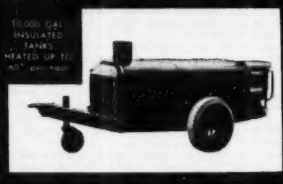

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H. N. Berger, 111 E. Live Oak Ave., Arcadia. Contract Awarded, $503,320, frame, stucco DWELLINGS, Lowman Ave., Vista Del Rosa St., DOWNEY, CALIF. Country Homes, 111 E. Live Oak Ave., Arcadia, Calif.

Wm. Simpson Constr. Co., 816 W. 5 St., Los Angeles, Calif. Contract Awarded, $500,000. rein-con. WAREHOUSE, LOS ANGELES, CALIF. McKesson & Robbins, Inc., 200 S. Los Angeles St., Los Angeles, Calif. Brandon & Johnson, engrs. 501 Boyleston Ave., and Beelman & Spackler, archts. 7421 Beverly Blvd., both Los Angeles, Calif. CD 6/1.

▲ **Nomellini Constr. Co.**, P.O. Box 542, Stockton, Calif. Contract Awarded, $642,500, general constr. Institute for EPILEPTICS BLDG; $546,110, mechanical servvices for same, PORTERVILLE, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Jan. 14, awarded Jan. 19. CD 1/9, under LB.

Albert Gerston, 6363 Wilshire Blvd., Los Angeles, Calif. Contract Awarded. $558,150. 66 frame, stucco DWELLINGS, Glengarry Ave. and Norwalk Blvd. WHITTIER, CALIF. Crown Land Co., 6363 Wilshire Blvd., Los Angeles, Calif. Paul Duncan, 4823 Laurel Canyon Blvd., Los Angeles, Calif., archt.

ALASKA

BIDS ASKED—BUILDINGS

† **Alaska, Eklutna**—WAREHOUSE—B.A. 2/27—Bureau Reclamation, Dpt. Interior, Palmer, warehouse at Eklutna Government Camp, Eklutna Proj., approx. 34 mi. northeast of Anchorage and 15 mi. south of Palmer, Spec. No. DC-3295; adv. ENR 1/25.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Alta., Taber—B.A. 2/5—H. E. Ellis, town secy-treas., Town Hall, constr., supply materials for sewerage sys., incl. disposal plant, installing 90,000 ft. 4-to 24-in. sewers and about 140 manholes, supply calls for 2 and possibly 4 sewage lift pumps, 140 c.i. manholes, frames and misc. iron work. Plans deposit $25. Haddin, Davis & Brown, 513 8 Ave. West Calgary, engrs. CD 8/23.

Ont., Ottawa—AIR RUNWAYS, etc.—B.A. 2/6—F. T. Collins, secy. Dpt Transport Hunter Bldg., runways, taxi strips at Ottawa (Uplands) Airport. $800,000. Plans deposit $25. CD 4/14/47.

Ont., Toronto—B. A. 2/6 City, H. E. McCallum, mayor, City Hall supply, installing 42-in. watermain on Dundas St. Ext., from Kingston Rd. to Coxwell Ave., 1870 ft. steel pipe with cement mortar. Plans deposit $25. CD 2/2.

Ont., Uplands (Postal Dist. Ottawa)—RUNWAYS, etc.—B.A. 2/6— Dpt. Transport, Ottawa, runways and taxi-strips at airport, for Govt. of Canada, Hunter Bldg., Ottawa.

LOW BIDDERS—HEAVY CONSTRUCTION

Francis Hankin & Co. Ltd., 57 Bloor St. W., Toronto, Ont., Low Bidder, Approx. $778,000, Contract 37-A, supply, installing furnaces of mechanically-stoked type, flues, chimney and appurtenances for incinerator; Approx. $933,000, Contr. 37-B furnace of rectangular type for incinerator, TORONTO, ONT. City, H. E. McCallum, mayor, Toronto, Ont. Bids Jan. 16. CD 12/14.

CONTRACTS—HEAVY CONSTRUCTION

Middlesex County Council, County Bldgs., London, Ont. Own Forces. $740,000, grading, surf. 3 mi. Oxford St., grading, surf. imprv. 60 mi. county roads, wid'n. 12 culverts and bridges, new machinery and equip., LONDON, ONT. Awarded Jan. 20. W. K. Clawson, County Bldgs., London, Ont., engr.

▲ **La Compagni de Construction Standard Ltee**, Industrial Center No. Five, St. Malo, Quebec, Que. Contract Awarded, $3,150,854, est. $3,100,000, 7 mi. water mains between water intake at Chateau d' Eau and city, QUEBEC CITY, QUE. City, F. X. Chouniard, city clk., Quebec City, Que. Bids Oct. 17. CD 9/22.

BIDS ASKED—BUILDINGS

Alta., Calgary—Y. W. C. A. WING—B.A. 2/5—Rule, Wynn & Rule, 512 8 Ave. W. Calgary, rein.-con. Y. W. C. A. bldg. wing, 12 Ave., west of here, for Young Women's Christian Assn., Calgary, $350,000. Plans deposit $50.

Ont., Aylmer—SCHOOL—B.A. 2/5—J. B. Parkin & Assoc., archts., 717 Church St., Toronto, 1 story, 60x150 ft., rein-con., brick school, John St. for Public School Bd., Aylmer. Plans deposit $25. CD 1/8.

▲ **Que., Bagotville**—BARRACK BLOCK, etc.—B.A. 2/9—Reg. Constr. Eng. Defence Constr. Ltd., 1247 Guy St., Montreal, Que., barrack block, combined mess, fire hall and supply bldg. at R. C. A. F. Station. Approx. $1,000,000. Plans deposit $100.

▲ **B. C., Kamloops**—SCHOOL—B.A. 2/12—A. J. Blake, secy. School Dist. No. 24, Kamloops, concrete, frame Junior-Senior High School and dormitory bldg. Approx. $1,000,000. Plans deposit $50. Postle & Korner, 1485 Clyde Ave., West Vancouver, archts. CD 7/6.

▲ **Alta., Edmonton**—MILL—Bids Asked—T. A. Burton & Co., engrs., 70 King St., St. Catherines, 1st unit, 1 story with main bldg., 80x630 ft., brick, tile, rein.-con. pulp and paper mill, 80x150 ft., grinder room, on North Saskatchewan River, 6 mi. east of here, for Edmonton Pulp & Paper Mills Ltd., c/o R. O. Sweezey, 132 St. James St. W., Montreal, Que. Approx. $14,000,000. CD 1/6.

SOON LETS CONTRACT—BUILDINGS

Ont., Toronto—PLANT—Giffels & Vallet of Canada Ltd., engrs., Canada Trust Bldg., Windsor, soon lets contract 1 story, steel, concrete, brick plant, north of Wilson Ave. near Toronto Barrie Hy., for Smith Mfg. Co. Ltd., 207 Front St. W., Approx. $550,000.

LOW BIDDERS—BUILDINGS

Bennett & White Constr. Co. Ltd., 660 Howe St., Vancouver, B. C., Low Bidder $936,746, three 2 story, rein.-con. 100-bed HOSPITAL units at Mental Hospital, NEW WESTMINSTER, B. C. Province of B. C., Parliament Bldgs., Victoria, B. C. Bids Jan. 15. CD 12/27.

CONTRACTS—BUILDINGS

▲ **C. B. Riley Constr. Co. Ltd.**, 3733 Kingsway, Burnaby, B. C., Owner builds. $3,500,000, 400 frame HOUSES, BURNABY, B. C. Awarded Jan. 15.

Terminal Constr. Co. Ltd., Dominion Square Bldg., Montreal, Que. Contract Awarded, Approx. $500,000. 65 houses at R.C.A.F. Station, Tender No. 4/50, CHATHAM, N.B. Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, N. S. Bids Dec. 20. CD 12/12.

Foundation Co. of Ontario Ltd., 428 Richmond St., London, Ont. Contract Awarded. Approx. $700,000, 1 story, rein.-con. school, Wavell St., 2 wing building first wing 68x406 ft. second wing 68x3366 ft., LONDON, ONT. Bd. Educ., London, Ont. Bids Jan. 15. CD 1/11.

Arthur J. Lenox Contractors Ltd., Laird Dr., 200 A Leaside, Ont. Contract Awarded. Approx. $600,000. WIRE DRAWING bldg., brick, steel plant addn., Laird Dr. North, TORONTO, ONT. Canada Wire & Cable Co. Ltd., Laird Dr., Toronto, Ont.

Milne & Nicholas Ltd., 57 Bloor St. West, Toronto, Ont., Contract Awarded. Approx. $750,000. 2 story, full bsmnt., L-shaped 175x153 ft., rein.-con., brick national headquarters bldg., Wellesley St. E., TORONTO, ONT. Canadian Red Cross Society 95 Wellesley St. E., Toronto, Ont. Bids Dec. 20. CD 12/28.

W. B. Sullivan Constr. Ltd., 30 Bloor St., W. Toronto, Ont., Contract Awarded, $676,345, Units 12 and 15 of Regent Park, HOUSING, TORONTO, ONT. Toronto Housing Auth., City Hall, Toronto, Ont. Bids Dec. 12. CD 12/21, under LB.

E. Frenette Ltd., 75 St. Lawrence St., Quebec City, Que. Contract Awarded. $800,000. 5 story, 44x200 ft., rein.-con. brick CONVENT addn., GROS PINS, QUE. Reverend Sisters of St. Francois d' Assisi de Lyon, Gros Pins, Que. CD 6/22.

J. L. E. Price & Co. Ltd., 1480 Sherbrooke St., Montreal, Que. Contract Awarded. $1,250,000, 80,000 sq. ft. FACTORY Royalmount Ave., MONTREAL, QUE. North American Cyanamid Ltd., Royal Bank Bldg., Toronto, Ont. CD 12/19.

▲ **Fraser—Brace Eng. Co. Ltd.**, 160 St. James St. W., Montreal, Que., Contract Awarded, Approx. $1,400,000. PLANT alterations, extens., SHAWINIGAN FALLS, QUE. Canadian Industries Ltd., Beaver Hall Hill, Montreal, Que. CD 8/25.

(Proposal Advertisements see pp. 86 to 89)

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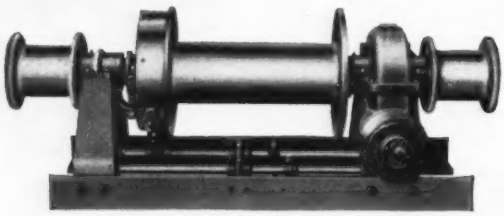

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OFFICIAL PROPOSALS

Bids: April 16, 1951 (291)

Hydro-Electric Project

BIDS INVITED FOR DESIGN AND CONSTRUCTION OF THE GUTHEGA HYDRO-ELECTRIC PROJECT

Bids are invited from organisations with extensive experience in the design and construction of large hydro-electric works for the design and construction of the Guthega Project in the Snowy Mountains Area, Australia, on a "Target Estimate" basis under which the contractor would be paid the actual cost of works and a fixed fee which would include a design fee and a fee to cover administrative charges, together with incentive provisions.

The contract will include a dam 100 feet high and 400 feet long, a tunnel 3 miles long to discharge 1520 cusecs with a total head loss not exceeding 30 feet, a surge tank, a pipeline about 3,500 feet long from the tunnel to the power house, and a power station with provision for the installation of three Francis turbo-generators, each of 30,000 kilowatts operating under an average net head of about 800 feet, and provision for the installation of associated switch gear, transformers and ancillary equipment. The supply of turbo-generators and other electrical equipment is not part of the contract.

The works are located at Latitude 36°23' South, and Longitude 148°21' East, in steep granitic country at an elevation of 4300 to 5200 feet above sea level which is approximately the winter snowline.

Preliminary information and sketch plans are now available to genuinely interested contractors, and Exhibition Documents comprising General Conditions of Contract, Specification and General Plans, and Conditions of Tendering will be available early in February, 1951, at a cost of £(A)10.10.0 per set on receipt of written application, enclosing remittance. Preliminary information and Exhibition Documents may be obtained from the Secretary, Snowy Mountains Hydro-Electric Authority, Box 4900, G.P.O., Sydney, Australia, or from the Authority's London office at No. 1 Regent Street, Piccadilly.

Interested Contractors must inspect the site before submitting their offer.

An overseas Contractor would be required to provide virtually all his staff and labour from outside Australia.

Bids will be considered only from organizations which have a record of successful achievement in hydro-electric design and construction.

It is required that the contract works be completed in a period of approximately two years from date of contract.

Bids in Australian currency, written in English and endorsed "Contract 5008, Offer for Design and Construction of the Guthega Project" will be received by the Secretary, Snowy Mountains Hydro-Electric Authority at 85 O'Riordan Street, Alexandria, New South Wales, until 12 noon on Monday, 16th April, 1951. A preliminary deposit of £A1000, payable at Sydney, must be lodged with the offer.

Lowest or any offer not necessarily accepted.

R. F. ARCHER,
Secretary

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DS-3290) will be received by the Bureau of Reclamation, Denver, Colorado, until February 20, 1951, and then publicly opened for furnishing four 3-foot by 6-foot 6-inch high-pressure gates with four 85,000-pound hydraulic hoists for Colorado-Big Thompson Project, Colorado. Delivery is desired within 180 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado. (290)

(Continued on page 87)

READ THE OFFICIAL PROPOSAL COLUMNS OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS
(Continued from page 86)

Bids: February 15, 1950 (273)

Hartman Run Bridge

MORGANTOWN, WEST VIRGINIA

Sealed proposals will be received by the County Court of Monongalia County, West Virginia from Contractors qualified by West Virginia or other approved highway departments for the construction of a reinforced concrete arch bridge and approaches thereto, which involve the following principal items of work:

Item No.	Description	Quantity	Unit
7	Dry Excavation	717	cu. yd.
9	Rock Excavation	161	cu. yd.
71-72	Class A Concrete	1,111	cu. yd.
75B	Metal Handrailing	671	lin. ft.
78	Reinforcing Steel	285,163	lbs.
91	Structural Steel	6,258	lbs.

All proposals will be received at the office of the County Court in the Courthouse at Morgantown until 10:00 A.M., February 15, 1951, at which time and place said proposals will be publicly opened and read.

Plans, specifications and other contract documents may be seen and inspected by prospective bidders at the office of Frank D. McEnteer, 504 Baltimore Avenue, Clarksburg, West Virginia. Prospective bidders may obtain copies of the above from the Consulting Engineer upon application accompanied by payment of $10.00 which will not be refunded.

The receipt and opening of bids is subject to evidence on the part of the bidder of his prequalification to perform.

Proposals must be made on the standard forms furnished as a part of the contract documents and shall be accompanied by a certified check in the amount of 5% of the total bid made payable to the County Court of Monongalia County, West Virginia. Checks of all bidders except the two lowest will be returned immediately after the opening. The County Court reserves the right to hold the check of the two low bidders for not to exceed thirty days.

Proposals shall be enclosed in a sealed envelope addressed to the County Court and bearing the name and address of the bidder and the designation "Bid on Hartman Run Bridge". The right is reserved to reject any or all bids.

COUNTY COURT OF MONONGALIA COUNTY, WEST VIRGINIA
By O. M. Herod, President

Bids: February 13, 1951 (294)

Construction of Route 4 Parkway

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 4 PARKWAY, SECTIONS 6H & 7A

Construction of Route 4 Parkway, Sections 6H and 7A, Grading from Myrtle Avenue to South Avenue, Township of Cranford, Union County, Federal Project No. U-188(20). Length 0.326 miles.

Estimated:
7,700 cu. yds. Roadway Excavation—Earth
310,000 cu. yds. Borrow Excavation

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, February 13, 1951, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and Section 1, P. L. 834, 80th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 268 N. Broad Street, Elizabeth, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

OFFICIAL PROPOSALS

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed enveloped will be furnished on application. Bids not enclosed in sealed special envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: February 13, 1951 (293)

Street Improvement

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

NORTH & SOUTH MAIN STREET, MANVILLE

Improvement of North and South Main Street from Philadelphia and Reading Railroad to Royce's Brook and from Brooks Avenue to Dukes Parkway in the Borough of Manville, Somerset County. Federal Aid Secondary Project No. S-117(3). Length 0.45 miles.

Estimated:
900 cu. yds. Roadway Excavation—Unclassified
820 tons Bit. Concrete, FA-BC-1 (1½")
4,182 sq. yds. 4" Macadam Foundation
4,182 sq. yds. 3" Modified Penetration Macadam
4 units Drop Inlets, Type 'A'
234 lin. ft. Drainage

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, February 13, 1951, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements, and by Sections 2, 3 and 4, P. L. 521, 78th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 149 West Main Street, Somerville, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: February 13, 1951 (292)

Route Construction

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 29, SECTION 7B

Construction of Route 29, Section 7B, Dualization from Mercer Street to Thompson Avenue, Borough of Somerville and Township of Bridgewater, Somerset County, Federal Project No. UI-178(9). Length 3.246 miles.

Estimated:
200,700 cu. yds. Roadway Excavation—Unclassified
12,000 cu. yds. Channel & Ditch Excavation—Earth
12,400 sq. yds. 4" Macadam Base Course
12,200 sq. yds. 3" Mod. Pen. Mac. Inter. Course
630 tons Pavement, Type "A" or "F"
67,000 sq. yds. 10" Rein. Conc. Pavement Surface

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, February 13, 1951, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements, and by Section 1, P. L. 834, 80th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 149 W. Main St., Somerville, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

(Continued on page 88)

OFFICIAL PROPOSALS
(Continued from page 87)

Bids: February 14, 1951 (285)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law and the Canal Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on Wednesday, February 14, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 5				
		C. R. Waters, Dist. Engr., 65 Court Street, Buffalo, N. Y.				
Erie	M-51-3	City of Buffalo: Railroad Sidings No. 77 & 76 Erie Basin		Reconstruction of Siding Tracks & Turnouts	$500 Plans $10	$9,100
Erie	FAOT 51-1 FARC 51-4 FAST 51-1	Ontario Thruway (William St. to Walden Ave.) Broadway-Depew, S. H. 914; William Street, Co. Rd. 207 Project No. UI-1071(7)	1.93 Cont. 0.70 Access	9"-2 Crse, Cem. Conc. Pavt. 2 at 37' Wide = 1.57 mi. Misc. Work = 0.33 mi. Asp. Conc. Opt. = 0.33 mi. (2 Crse. Cem. Conc. Pavt. on Access = 0.70 mi.) Hy. Sep. 3 Sp. Alpha I-Beam 143' Total Hy. Sep. 4 Sp. Alpha I-Beam 196' Total R. R. Sep. 12 Sp. Alpha I-Beam 1026.84' Total R. R. Sep. 4 Sp. I-Beam 196' Total Alpha Royalty = $4,048.00	$200,000 Plans $50	$3,790,000
Erie	GISP 51-1	Grand Island-South Parkway, Gisp 35-1, Gisp 35-2	2.49	8"-2 Crse. Cem. Conc. Pavt. 24' Wide	$24,000 Plans $15	$440,000
		DISTRICT No. 8				
		J. S. Bixby, Dist. Engr., Pleasant Valley Road, Poughkeepsie, N. Y.				
Orange & Rockland	PIP 51-1P	Palisades Interstate Parkway, Pip48-1 & Pip50-1	3.57	8" Cem. Conc. Pavt. 24'-36' Wide	$55,000 Plans $25	$993,000
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Nassau & Queens	RC 51-5	Jerico Turnpike, Pts. 1 & 2, S. H. 1831, S. H. 1940 Massapequa-Glen Cove, S. H. 9017 North Hempstead Turnpike, S. H. 9018 Hempstead-Farmingdale, Pt. 3, S. H. 9055	3.36	White Plastic Traffic Line Marker	$350 Plans $10	$6,500
Suffolk	Cap. S. P. 51-1	Captree State Parkway (So. St. Pkwy. to Montauk Hy.) (Cont. No. 2)	2.53 Pkwy. 2.86 Access	8" Cem. Conc. Pavt. 2 at 24' Wide (Access = 8" Cem. Conc. Pavt. = 1.81 mi.; Asp. Conc. = 0.95 mi., Bit. Treated Earth = 0.10 mi.); Hy. Sep. 89'-10-7/8" Rigid Frame Hy. Sep. 2 Span Rigid Frame 68'-9-3/8" Each Hy. Sep. 72'-2-3/4" Rigid Frame RR Sep. 3 Span Rigid Frame 199'-1-3/4" Total	$115,000 Plans $50	$2,095,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law and Canal Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact description of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

OFFICIAL PROPOSALS

the following projects; Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Bids: February 7, 1951 (282)

Sewerage System and Treatment Plant

THE MIDDLEBURY MUNICIPAL AUTHORITY,
BOROUGH OF MIDDLEBURG,
SNYDER COUNTY, PENNSYLVANIA

Sealed proposals will be received at the Borough Building, Middleburg, Pennsylvania, until 3:00 P.M., E.S.T., February 20th, 1951 for furnishing all necessary labor, materials and equipment, and performing all work for the construction of a SEWERAGE SYSTEM AND A SEWAGE TREATMENT PLANT AND APPURTENANCES, and will there be publicly opened and read at that time. Separate proposals will be received upon two parts of the project as follows:

Sewerage System—including 32,000 lin. ft., 8" and 10" vitrified sewers; 4,600 lin. ft., 6" vitrified sewer house connections; 126 manholes and other appurtenances.

Sewage Treatment Plant — Base Bid (Primary Treatment only)—including Pumping Station, Imhoff Tank and Dosing Tank, Single Open Sludge Bed, Exterior Piping, Electrical Work, Fencing, Access Road and Landscaping, Specified Equipment and Appurtenances.

Alternate Bid (Complete Treatment)—including Pumping Station, Imhoff Tank and Dosing Tank, Trickling Filter, Settling Tank, Double Open Sludge Bed, Exterior Piping, Electrical Work, Fencing, Access Road and Landscaping, Specified Equipment and Appurtenances.

Proposals shall be accompanied by certified checks in accordance with provisions contained in the Specifications and in the following amounts:

Sewerage System —$20,000
Sewage Treatment Plant—$ 7,500

Copies of the Contract Documents, including Plans and Specifications, may be seen at the office of Gannett Fleming Corddry and Carpenter, Inc., 600 North Second Street, Harrisburg, Penna., or at the office of the Authority Chairman James G. Thompson, Jr., First National Bank Building, Middleburg, Penna.; or they may be obtained from the files of the above places upon deposit of the following amounts for each set:

Sewerage System —$20.00
Sewage Treatment Plant —$15.00

Full refund will be made to actual bidders for return of one set in good condition within ten (10) days after closing date for receipt of bids; refund for return of all other sets, in good condition within the same period, will be fifty (50) percent of the deposit.

MIDDLEBURG MUNICIPAL AUTHORITY
Borough of Middleburg, Pennsylvania

Gannett Fleming Corddry & Carpenter, Inc., Engrs.
600 N. Second Street,
Harrisburg, Pennsylvania

OFFICIAL PROPOSALS

Bids: February 20, 1951 (286)

The Delaware Memorial Bridge

Sealed proposals for the paving of the highway approaches to "The Delaware Memorial Bridge" over the Delaware River near Wilmington, Delaware will be received by the Delaware State Highway Department at the office of the Director, Delaware Crossing Division, Continental American Building, Wilmington, Delaware, until 12 o'clock noon Eastern Standard Time, February 20, 1951. Immediately thereafter proposals will be publicly opened and read in the Wilmington City Hall. The work will be let under two separate contracts: Contract No. 13 for the East Approach Paving and Contract No. 15 for the West Approach Paving.

The work involves the following approximate principal quantities:

Contract No. 13 East Approach Paving:
Selected Material (For Pavement Subbase, 8,260 cu. yds.; Cement Concrete Pavement, 4,630 cu. yds.; Wire Mesh Reinforcement, 1,600 squares; Cement Concrete Curb, 4,336 lin. ft.; Bituminous Concrete Pavement, 250 tons; Guard Rail (Steel Beam Type), 1,038 lin. ft.; Topsoil, 11,000 sq. yds.; Railroad Track Construction, Lump Sum.

Contract No. 15 West Approach Paving:
Selected Permeable Material, 20,000 cu. yds.; Selected Material (For Pavement Subbase), 12,300 cu. yds.; Earth Excavation, 1,000 cu. yds.; Cement Concrete Pavement, 7,020 cu. yds.; Wire Mesh Reinforcement, 2,360 squares; Cement Concrete Curb, 6,379 lin. ft.; Bituminous Concrete Pavement, 630 Tons; Waterbound Macadam Base Course, 620 tons; Guard Rail (Steel Beam Type), 5,120 lin. ft.; Topsoil, 63,000 sq. yds.; Cement Concrete Masonry, 140 cu. yds.

Performance of the contract shall begin promptly after execution of the contracts and contracts shall be completed on or before the dates scheduled as follows:

Contract No. 13 East Approach Paving, July 1, 1951.

Contract No. 15 West Approach Paving, July 1, 1951.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms furnished by the Department.

Each proposal must be accompanied by an acceptable surety bond or certified check for a sum equal to at least ten (10) per cent of the total amount of the proposal.

The Contracts will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all bids.

The Plans and Specifications and other contract documents may be examined at the office of the Director, Delaware Crossing Division, and at the office of the Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. One complete set of the Plans and two copies of the Specifications for these contracts may be obtained from the Engineers after February 1, 1951 upon payment of $15.00. Any prospective bidder who has made such a deposit may secure extra blueprint copies of the Plans upon payment of 50 cents per drawing, and extra copies of the Specifications upon payment of $3.00 per copy.

State Highway Department
By: J. Gordon Smith,
Chairman

W. A. McWilliams, Director
Delaware Crossing Division
Wilmington, Delaware
January 24, 1951

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3295) will be received by Bureau of Reclamation, Palmer, Alaska, February 27, 1951, and then publicly opened for furnishing labor and materials and performing all work for the erection of warehouse building at Eklutna Government Camp, Eklutna Project, Alaska. The work is situated approximately 34 miles northeast of Anchorage, Alaska, and 15 miles south of Palmer, Alaska. Principal items are approximately: 6,000 cu. yds., excavation; 200 cu. yds., concrete; erecting warehouse building; and other work. Time allowed for completion will be 230 days. For particulars, address Bureau of Reclamation, Palmer, Alaska; or Building 1-A, Denver Federal Center, Denver, Colorado. (288)

(Continued on page 89)

OFFICIAL PROPOSALS
(Continued from page 88)

Bids: February 8, 1951 (265)

General Construction Setauket School

Sealed bids will be received by the Board of Education, Union Free School District Number 2, Town of Brookhaven, East Setauket, Suffolk County, New York, at The Setauket High School Office until 2 p.m. on Thursday, February 8, 1951, for all labor and material necessary for the construction of a K-9 school building to be located on the southwest side of North Country Road between the Emma S. Clark Memorial Library Association and the St. James Roman Catholic Church in Setauket, according to plans and specifications prepared by the architect of the Board, Mr. Richard Haviland Smythe, 1 East 53 St., New York 22, and on file in the office of the school and in the office of F. W. Dodge Corporation, 119 West 40 St., New York 18. Copies of said plans and specifications may be obtained from the school on and after Monday, January 15, 1951, on deposit of a fee, which deposit will be returned upon the return of the plans and specifications in good order.

Separate proposals will be received on the work as a whole, on the general contract exclusive of mechanical trades and equipment, or upon the following items or any combination of them: Heating and Ventilating, Plumbing, Electrical Work.

All proposals shall be made in conformity to law, on the letterhead of the contractor, and shall be enclosed in a sealed envelope addressed to the Board of Education, Union Free School District Number 2, East Setauket, L. I., N. Y., "Proposal for General Contract (or other specific items) for the Construction of a School Building in Setauket" on the outside of the envelope.

Each bid shall be accompanied by a bond with surety or sureties satisfactory to the Board of Education, which surety or sureties shall be in an amount equal to or greater than five (5%) per cent of the amount of the bid, or by cash or certified check drawn on a solvent bank or trust company in an amount equal to or greater than five per cent (5%) of the amount of the bid. Surety shall be given or checks shall be drawn in favor of the Treasurer of the Board of Education. Sureties will be forfeited if the bidder refuses or fails to enter into a contract with the Board and to furnish the required construction bond within ten days after notice of acceptance of proposal. Sureties of the unsuccessful bidders will be returned and the surety of the successful bidder will be returned upon execution of the contract and furnishing a bond as a guarantee of the faithful performance of the work.

The Board of Education reserves the right to waive any informalities in or to reject any, or any part of any or all bids.

Frederick Hilliard, Clerk
Union Free School District #2
East Setauket, N. Y.

Bids: March 22, 1951 (284)

Construction Work & Filter & Misc. Equipment & Piping

MEMPHIS LIGHT, GAS AND WATER DIVISION
City of Memphis
Memphis, Tennessee

THOMAS H. ALLEN PUMPING STATION
Contract No. 2456 General Construction Work
Contract No. 2457 Filter and Miscellaneous Equipment and Piping

NOTICE TO BIDDERS

Sealed proposals in duplicate, addressed to the Board of Light, Gas and Water Commissioners, City of Memphis, and endorsed with the bidder's name and designation of the work bid upon, will be received at the office of the Memphis Light, Gas and Water Division, 179 Madison Avenue, Memphis, Tennessee, until 2:00 P.M. on the 22nd day of March, 1951, and then publicly opened and read, for the construction complete of the Thomas H. Allen Pumping Station and work appurtenant thereto.

Proposals will be received for work to be performed under separate contracts as follows.

Contract No. 2456 Covering "General Construction Work" for and in connection with a 30 MGD water treatment plant and pumping station and including: a separate aerator building; two 10 million gallon reservoirs (clear wells); a garage; a fuel oil pump house; miscellaneous cast iron yard piping and connections to raw water collecting lines from the well fields; miscellaneous cast iron pump suction and discharge piping, Venturi tubes, flow meters and miscellaneous gauges; reinforced concrete pipe wash water sewer line; miscellaneous concrete pipe drains on the site; miscellaneous paving work on and adjacent to the site and; installation *only* of pumping, switch gear and diesel generating equipment and transformers furnished by the Owner.

Contract No. 2457 Covering "Filter and Miscellaneous Equipment and Piping" for ten 3 million gallon capacity filter units and including cast iron filter piping, filter bottoms and media, filter operating table accessories and chlorination equipment.

All bids must be made in duplicate upon the blank form of the proposal attached to the contract and specifications and each price shall be given both in writing and in figures, and in case of variance the price in writing will prevail.

The duplicate bid must be marked "DUPLICATE". In case of discrepancy between the original and duplicate bid, as filed, the original shall govern.

Each successful bidder will be required to execute a performance bond acceptable to the Board of Light, Gas and Water Commissioners on the form attached to the contract and specifications in the amount of 100% of the contract price.

All bidders must be licensed contractors as required by Chapter 70 of the Public Acts of 1931 of the General Assembly of the State of Tennessee, Section 1. Bidder's name and license number must be placed on the envelope containing these documents.

One complete set of plans and three copies of the specifications and contract documents covering contracts No. 2456 and 2457 may be obtained from the Memphis Light, Gas and Water Division, Memphis, Tennessee, or Black & Veatch, Consulting Engineers, 4706 Broadway, Kansas City 2, Missouri on receipt of a deposit of $80.00 for each such set of documents obtained. The full amount of the deposit for one set only of such documents will be refunded to the actual bidder making such deposit upon return of all documents not filed with his bid, and $20.00 of each other deposit will be refunded upon the return of all documents covered thereby all within 30 days after the bids are opened. All deposits shall be made payable to Black & Veatch.

Each proposal must be signed in ink by the bidder with his full name and with his business address or place of residence. In the case of a firm, the name and residence of each member must be inserted, and in case the proposal is submitted by, or in behalf of, a corporation, it must be signed in the name of such corporation by an official who is authorized to bind the bidder, and who shall also affix the corporate seal of such corporation. Any person signing a proposal as an agent or attorney, and in others may be required to submit satisfactory evidence of his authority to do so. The title of the person executing the proposal or contract shall be clearly indicated beneath his signature.

No bidder shall submit more than one proposal. Two proposals under different names will not be received from one firm or association.

Each bid must be accompanied by a bond executed by the bidder and a Surety Company satisfactory to the Board of Light, Gas and Water Commissioners on the form hereto attached, in the sum of ten (10%) percent of the amount of the bid or, in lieu of such bond, the bidder may deposit with the Board of Light, Gas and Water Commissioners a certified check satisfactory and payable to the order of the Board of Light, Gas and Water Commissioners, equal in the amount to such bond. The said bond or certified check is required as a guarantee that, if the bid is accepted, a contract will be entered into and the performance thereof properly secured.

Each bidder to whom a contract may be awarded shall attend at the office of the Board of Light, Gas and Water Commissioners, with Sureties offered by him within ten (10) days (Sunday excepted) after notification by said Board of Light, Gas and Water Commissioners of acceptance of his proposal, and shall there sign the contract or contracts in quadruplicate. In case of failure to do so the bidder shall be considered as having abandoned the proposal, and the certified check or bond accompanying said proposal shall be forfeited to the Board of Light, Gas and Water Commissioners. Before the execution of the said contract or contracts, each successful bidder shall furnish a surety company bond in the sum of the total amount of the bid. Said bond shall be made upon the form attached hereto and shall be made a part of the Contract. Such surety shall be acceptable to the Board of Light, Gas and Water Commissioners. All contract bonds shall be written through local agents in Memphis, Tennessee.

The certified checks of all bidders will be returned upon demand after the execution of the contract or contracts, and bidding bonds of all bidders will become null and void upon execution of the contract or contracts, and the furnishing of the required surety bond by the successful bidder or bidders.

The Board of Light, Gas and Water Commissioners reserves the right to reject any or all bids, to waive any informalities in the bids received and to accept any bid or bids which it deems most favorable to the interest of the Memphis Light, Gas and Water Division.

No bidder may withdraw his bid for a period of 30 days after the date and hour set for opening bids.

Each bidder must make a careful investigation of the site and inform himself in all matters which may affect the work, as no information furnished by the Board of Light, Gas and Water Commissioners, or their representatives, upon such matters shall in any way relieve the Contractor from risk or responsibility in fulfilling all of the terms of the contract and specification.

In making the awards consideration will be given to the experience of the bidder, to his facilities for doing this kind of work and to his ability to complete the work at an early date.

Each bidder shall submit with his proposal a written statement in sufficient detail to satisfy the Board of Light, Gas and Water Commissioners that the bidder has ample equipment, experience, ability and resources to perform in a satisfactory manner all the work covered by the contract, the specifications and the plans and within the time specified in his proposal.

MEMPHIS LIGHT, GAS AND WATER DIVISION
City of Memphis, Memphis, Tennessee
C. S. Beatus, Director—Purchases, Stores & Supplies

U. S. Government

Department of Commerce, Bureau of Public Roads, January 16, 1951. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., FEBRUARY 20, 1951, for Project 1G3, Baltimore-Washington Parkway, Anne Arundel County, Maryland. Two Reinforced Concrete Rigid Frame Structures and Approaches in Fort Meade Area. Length 0.047 mile. The approximate quantities of the more important items are as follows: 23,000 cu. yd. Excavation, 2,000 cu. yd. Cement Concrete, 240,000 lb. Reinforcing Steel, and 20,000 lb. Structural Steel. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or CERTIFIED check made payable to the Treasurer of the United States, will be required to insure their return within 15 days after the opening of bids. Plans, specifications and proposal forms may be obtained at the address given above. H. J. Spelman, Division Engineer. (289)

MISSOURI RIVER BASIN PROJECT, Design Section, Casper, Wyoming, January 15, 1951. UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703S-167 will be received at P. O. Box 280, Reclamation, Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, February 8, 1951, and then publicly opened for furnishing and delivering Voltage Regulator and Switching Equipment for Chadron Substation, Transmission Division, Nebraska, Missouri River Basin Project.

Copies on the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: A. A. Batson, Regional Director, New Customhouse, Denver, Colorado, and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge to prospective bidders for copies of the specifications; to others $0.25 per copy, not returnable. (287)

ENGINEERING

We anticipate increasing our engineering organization during the next several months for the design of Oil Refinery, Blast Furnace, Open Hearth, Steel Mill and Power Plants.

These men should be qualified as draftsmen, designers, checkers or higher engineering skills on design of piping, instrumentation, pressure vessels, structural steel, concrete, platework, heavy mechanical equipment and electrical.

If you are interested and have engineering design experience on this class of work, write to us for a personnel form for prompt consideration of your qualifications.

This work is in our Cleveland office, and is on a 5-day, 45-hour week basis, with time and one-half over 40 hrs; also, vacation and holiday pay. Steady employment and a good opportunity with a good organization.

ARTHUR G. McKEE & CO.
2300 Chester Ave.
CLEVELAND 1, OHIO

EXCEPTIONAL OPPORTUNITY
FOR FOREMAN

Established firm is seeking a first class man thoroughly capable of handling details involved in running a fair sized ornamental and miscellaneous iron shop. To take complete charge. Excellent offer for right man.

P-8759, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

DESIGNERS, DRAFTSMEN - ELECTRICAL - MECHANICAL - STRUCTURAL. JOB LOCATED IN MIDDLE WEST. EXCELLENT WORKING CONDITIONS. GOOD SALARY. OLD ESTABLISHED COMPANY.

P-8539, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SALES ENGINEER MANAGER

Preferably with some experience on Industrial Building Construction in masonry concrete or carpentry lines. Must be able to sell new subcontracts for building work, also generally supervise installation crews. Advise qualifications fully, education, experience, age, health, salary earned and expected.

SW-8822, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** :EQUIPMENT :USED OR RESALE

UNDISPLAYED RATE

$1.50 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.
EMPLOYMENT WANTED and Individual Selling Opportunity undisplayed rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.
Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED RATE

The advertising rate $14.25 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col., 3 col.—30 inches to a page. E.N.R.

New advertisements received by February 12 will appear in the February 22nd issue.

First Class SUP'T WANTED

On large flood control State contract in central N. J. Work involves cofferdaming; concrete structures, including chamber water diversions, pipe work and fill. Must have had successful experience on comparable work. State availability experience, references and salary.

P-8831, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ENGINEERS WANTED for industrial fire prevention field work by national insurance organization with offices in most major cities. These are permanent jobs with a real future, but candidates should appreciate that extensive away-from-home travel is involved. Age 26-40 preferred. P-8306, Engineering News-Record.

GENERAL CONSTRUCTION Superintendent, Project and Field Engineers, Piping Superintendent, and Carpenter Superintendent wanted, experienced in Hydroelectric dam and powerhouse construction, work located in Latin America, advise age, experience, reference, and availability, address P-8683, Engineering News-Record.

STRUCTURAL STEEL Detail Draftsmen and Checkers. All types of Structures. Vacation and bonus plan, group insurances, good working conditions. Only top quality men. Send complete written information. Sanborn, Steketee and Associates, 1214 Cherry Street, Toledo 2, Ohio.

CONSTRUCTION SUPERINTENDENT for Mid-Western General Contractors. Must be capable of supervising all types of construction work. Excellent opportunity for one who qualifies. Reply stating age, experience and references to Perron Construction Company, 6525 Lincoln Avenue, Detroit 2, Michigan.

WANTED: CONSTRUCTION Superintendent. Construction Company located in Central Connecticut has opening for an A21, experienced job Superintendent for heavy concrete construction, including Bridges, Roads, Dams, etc. Must be capable to handle job from start to finish, handling all phases of the work. Must have excellent record for character, experience and production. When answering give full information, including past experience and availability. Salary secondary to procuring the right man. P-8621, Engineering News-Record.

CONSTRUCTION MEN—Construction superintendents, field engineers, field clerks preferably with experience in chemical plant and processing equipment. Locations in various States. P-8618, Engineering News-Record.

CIVIL ENGINEERING Technicians: (Laboratory and Field) experienced in soils, concrete, asphalt. Structural Engineers; foundation design. Drillers: soil borings-diamond drilling. Projects located in the East, Midwest, South. Furnish complete information including age, education, experience and salary. Toledo Testing Laboratory, Toledo, Ohio.

WANTED: STRUCTURAL Engineers, Mechanical Engineers and Industrial Architects; some defense work. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

STRUCTURAL DESIGNERS and Draftsmen wanted by Baltimore consultant for indeterminate reinforced concrete and steel structures. Good salaries, paid overtime and vacations. State Education, detailed experience, tentative reporting date and salary requirements in first letter. P-8815, Engineering News-Record.

SALARIED POSITIONS $3,500—$35,000

We offer the original personal employment service (established 41 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

POSITIONS VACANT

ENGINEER, EXPERIENCED as draftsman in detailing industrial piping and in field supervision in connection with mechanical installation work for sewage treatment plant. Write P. O. Box 1074, Roanoke, Va.

WANTED: TWO First-class, experienced construction superintendents for large project in Middle West. Salary commensurate with ability. In replying, give qualifications, experience, and availability. P-8829, Engineering News-Record.

POSITIONS WANTED

CHIEF STRUCTURAL and Architectural engineer. 25 years experience in the design and construction of industrial structures and power plants. PW-8628, Engineering News-Record.

GENERAL CARPENTER-Foreman 30 years on concrete dams, industrial plants, steel mills, hospitals, schools and bridges. Good union connections, available soon. PW-8693, Engineering News-Record.

CONSTRUCTION ACCOUNTANT—18 years diversified experience, capable of taking complete charge of any size job, sober, bondable, available at once. PW-8745, Engineering News-Record.

SUPERINTENDENT CONSTRUCTION 25 years broad industrial commercial institutional projects. Engineer. Anywhere. Salary $175 net. PW-8752, Engineering News-Record.

ENGINEER, EXECUTIVE. Member ASCE, member ASME. Twenty-eight years experience with contractors, Federal Government and in private practice on planning, design and administration of heavy engineering construction for large scale developments: hydro-electric flood control, steam-electric, bridges, industrial plants. Good organizer and administrator. Capable of assuming overall project responsibility. Registered engineer in several states and National Bureau certification. Seeks position commensurate with qualifications in engineering or associated fields. PW-8712, Engineering News-Record.

BRICKLAYER FOREMAN—twenty years experience large projects. Salary $150 weekly. PW-8723, Engineering News-Record.

PROJECT MANAGER—General Supt. 25 years diversified experience in all types of construction. Six years in Latin America. Highest references. PW-8730, Engineering News-Record.

CIVIL ENGINEER licensed, 35 years' experience design, construction heavy and light structures, housing. Estimating specification contract negotiations, costs, office routine. Wishes responsible position in East, but will go anywhere in U.S.A. if conditions are right. PW-8755, Engineering News-Record.

GENERAL FIELD Superintendent. Age 49. 30 years experience sewers, drainage, foundations, pile driving, heavy concrete bridges, overpasses, defense plants, army camps, sober available February first. PW-8785, Engineering News-Record.

CIVIL ENGINEER, 28, registered, 6 years general experience. Graduate Univ. Minn. Knowledge of French, and Spanish. Desire position middle west Available March. P. O. Box 195, Aguirre, Puerto Rico.

REGISTERED C.E. 20 years experience in design and construction of roads, bridges, streets, sewers, airports, etc. Desires permanent position. PW-8794, Engineering News-Record.

DESIGN AND Drafting Service-Detail and layout of plumbing, heating and air conditioning systems for industrial buildings, power plants, etc. Vehicular tunnel and subgrade ventilation experience. Specifications, estimating. PW-8796, Engineering News-Record.

(Continued on page 92)

Positions open for

ENGINEERS

Process (Chemical) Engineers
Construction Engineers
Project (Mechanical) Engineers

To Work On Petroleum, Petro-Chemical and Chemical Projects

Write in complete detail, giving age, positions held, references, education, salary expected. Personal interview can be arranged.

Address Personnel Department

E. B. BADGER & SONS COMPANY
75 Pitts St., Boston, Mass.

ENGINEERS

ELECTRICAL - MECHANICAL - STRUCTURAL

Openings in Ohio and New York offices offering long term employment with good salary for qualified Group Leaders, Designers and Draftsmen experienced in one or more of the following phases of industrial plant design:

Electrical	Power, lighting layouts and electrical controls.
Mechanical	Plant layout, process piping, conveyors, heating and ventilation, boiler houses, process equipment layout, refrigeration, plumbing, tanks and vessels, packaging equipment, special machinery and equipment.
Structural	Structural steel and reinforced concrete.

Please submit complete resume stating experience, education, salary required and availability date.

THE H. K. FERGUSON COMPANY
Engineers and Builders

The Ferguson Bldg. 1783 E. 11th St. Cleveland 14, Ohio
19 Rector Street New York 6, N. Y.

SANITARY ENGINEERS

California offers opportunities for professional advancement in this field. 2 years experience sanitary or public health engineering plus engineering degree or additional qualifying experience.
Salary $341 - $415
Write today. Recruitment Section, Dept. ASE
STATE PERSONNEL BOARD
1015 L Street Sacramento, California

CONSTRUCTION MEN WANTED IMMEDIATELY

Applications desired by large nationally known heavy works contractor headquartering Midwest for several positions as Area Construction Managers or Assistants, also Construction Project Managers and Superintendents on competitive bid, negotiated, or fee projects located generally Eastern half of U. S. A. or Overseas.

We require only men of mature and successful engineer construction experience and high degree of organizing, administrative ability, with good health and energy. Thorough knowledge of men, methods and machinery, specializing grading, structures, surfacing, highways, railroads, dams, airbases, etc.

Permanent positions with good salaries and away from home expenses with substantial commission bonus prospects to men of unusual ability. Please submit complete resume elaborating on experience, education, salary required and date of availability. Will acknowledge applications.

P-8666, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

DESIGNERS

Experienced in hydro electric power plants.

CORBETT-TINGHIR CO.
39 Broadway N. Y. 6, N. Y.

CITY OF DETROIT

Engineers experienced in the design and construction of water works needed for $35,000,000 project. Starting salary $4,382, $5,204, $5,736, $6,586 per year with annual increases. Submit resume of experience with application request.

DETROIT CIVIL SERVICE COMMISSION
1501 Water Board Building
735 Randolph Street, Detroit 26, Michigan

RIGGING SUPERVISOR

Large east coast refinery seeks rigging department supervisor. Require sufficient engineering background to supervise rigging operations in construction & maintenance work. Capable of directing large staff. Complete working knowledge of heavy mechanical equipment required. Write giving age, experience & salary desired.

P-8671, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

WANTED

TWO STRUCTURAL DETAILERS — CHECKERS

Permanent jobs for good men with experience in all types of bridge and building work. Apply by letter giving resume of experience and salary desired.

Paxton & Vierling Iron Works
P. O. Box 1085 Omaha, Nebraska

Experienced structural steel detail

Draftsmen and Checkers

Apply, giving age, experience, and salary required.

SOUTHERN ENGINEERING CO.
Box 1087 Charlotte, N. C.

Construction Superintendent Wanted

Experienced in commercial and industrial building and with excellent record for production and character. Location out-state Michigan. Give education, experience, salary expected and enclose snapshot.

P8834
1287 Portage St. Kalamazoo, Michigan

WATER POLLUTION CONTROL ENGINEERS

3—5 years experience related to treatment and disposal sewage and industrial waste plus degree in engineering or additional qualifying experience. Must be eligible for Calif. State License. Positions in Calif. State government. Starting salaries $4980 and $5772 per year. Official applications must be filed by March 10.
Write now to Dept. B, Recruitment Section, State Personnel Board, 1015 L Street, Sacramento 14, California.

HYDRAULIC ENGINEERS

Qualified by actual experience to make basic engineering determinations and to prepare studies, estimates, specifications, and designs for Hydroelectric projects.

Salaried position commensurate with experience; location in Boston. In reply please state educational qualifications, work experience, and salary desired.

Present employers will not be contacted before personal interview.

Stone & Webster
ENGINEERING CORPORATION
49 Federal St., Boston 7, Mass.

Structural Designers and Detailers

with at least three years experience wanted by well-established steel plant engineering and contracting firm specializing in constructing open hearth furnaces. Apply by mail.

SUITE 300,
610 Smithfield Street Pittsburgh 22, Penna.

WANTED

MECHANICAL ENGINEER

Established consulting firm, New York area, desires Mechanical Engineer, capable supervising starting, testing, operating and correcting troubles of steam-electric station equipment. Plant betterment work involving considerable travelling. Technical education, and plant operating or betterment experience required. State education, experience and salary desired.

P-8758, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Fortieth Year

OUR COURSES HAVE HELPED THOUSANDS
to better positions and to pass State Board Examinations

- Complete Structural Engineering Course.
- Public Works Structures.
- Architectural Engineering.
- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

PROJECT MANAGER

PROJECT MANAGER, General Construction Superintendent. Good organizer, Twenty-five years experience in heavy and difficult industrial construction, chemical plants, power houses, water treating plants etc. Available two weeks notice.

PW-8792, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS WANTED

(Continued from page 90)

MASTER MECHANIC, Equipment Supt., Mechanical Operating Engineer, over twenty-five years' experience with erection, repair and maintenance of heavy industrial, power house, pumping stations and marine equipment. Desires permanent position. PW-8810, Engineering News-Record.

GENERAL SUPERINTENDENT, 28 years experience on Sewers, Dams, Tunnels, Water, Dirt Moving, Bridges, Concrete. PW-8809, Engineering News-Record.

CHIEF ENGINEER mechanical and structural, employed, desires executive position in modern corporation engaged in metal fabrication and manufacturing machines. Administrate all departments. Top-rank references and proof of good record. PW-8808, Engineering News-Record.

AVAILABLE IMMEDIATELY, Engineer capable of assuming unlimited responsibility in preparation of plans and specifications, coordination, and expediting. Past experience with chemicals, power plants, heavy industrials, etc. PW-8826, Engineering News-Record.

SEWER CONSTRUCTION Foreman 45, 20 years experience, Italian; desires to work for a well tempered employer. PW-8827, Engineering News-Record.

CIVIL ENGINEER, registered, 13 years experience in photogrammetry, topography, traverse, triangulation, property surveys, construction layout. Prefer small town location or within commuting distance. PW-8823, Engineering News-Record.

MIT GRADUATE CE 1935. Age 38, 15 years experience, extremely capable office manager, project manager, 4 years in present position as expert estimator and office engineer with large building construction company. Opportunity for further advancement in near future rather dim. Present salary $8,000. PW-8825, Engineering News-Record.

CONSTRUCTION ENGINEER: 17 years experience-heavy construction United States and South America - Speak construction Spanish - Will go anywhere. PW-8814, Engineering News-Record.

EXECUTIVE, WELL acquainted in New York contracting circles, skilled organizer of field forces and office details, with over thirty years heavy and building construction experience, is available. Inquiries solicited from contractors requiring top man. PW-8835, Engineering News-Record.

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Patent Practice

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State age, condition and price

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Prefer diesel or gas but will consider modern steam rig. In reply state make, age, capacity, condition, type of power, location for inspection, best price. Reply to

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VACUUM PUMPS & STEAM BOOSTERS

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Worthington two-stage, water-cooled, vertical 250#, 80 CFM, new condition.

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10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
10x20 Beaumont crusher, reconditioned.
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3'x10' revolving screen.
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1½-ton Ford with any body.
2½-ton GMC, rebuilt.
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2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.
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New and rebuilt dump bodies.

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1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

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Lorain 75B, 1¼ yd. shovel, diesel power.
Lorain 55B gas powered crane.
P&H Model 625A 15-ton crawler crane.
Brownhoist 1-yd. gas shovel and crane.
Lorain 30 combination ½ yd. shovel, hoe & clam.
P&H Model 150 ½ yd. truck crane on 6x4 Mack.

SHOVEL & CRANE ATTACHMENTS

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P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 30B tunnel front attachment.
Koehring 301 dragline fairlead.
50' crane-clam boom, 1¼ or 1½-yd.
Lorain 75 fairlead.

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CLAM—DRAG—SCRAPER BUCKETS

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Lorain 41, ¾-yd. LBS #7433, rebuilt.
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Bucyrus-Erie 1¼-yd gas air, LBS #3782, fair.
Lorain 75 manganese 1¼-yd, LBS #7233. teeth and bail.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS #2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd for 3500 Manitowoc LBS #5763.

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1380'—Heltzel 7"x8" forms, with stakes.
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Flynn surgrader 10'-12', rebuilt.
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Cleveland formgrader, new condition.
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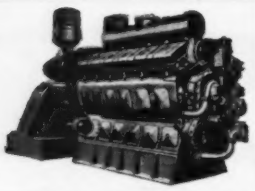

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937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12½x13T	750	600	125	General Motors	3-268A	150	1200
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Two Colby 50 ton gantry cranes
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SAUERMAN SLACKLINE MAST—100 ft. Mast only.
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SPECIAL

CRAWLER CRANE

¾ yd. Model 200 Osgood, Ser. No. 4373, powered by 8 cyl. 60 HP Chrysler Industrial engine Mdl. C-36-520, with 30' crane boom. LIKE BRAND NEW.

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Portable and stationary, electric diesel & gasoline power, sizes from 2 cu. ft., 1,000 cu. ft.

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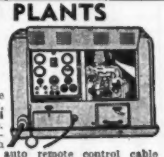

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With Gar Wood angle blade, double drum cable control unit and canopy top. Excellent condition. About 3300 hours use. Can be inspected near Jackson, Ohio. Contact **RALPH WHITE**, Phone 404-Y, Jackson, Ohio or **LEONARD MURPHY**, 1236 Seventeenth Street, Phone 70314, Portsmouth, Ohio.

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When the old stack at the Great Lakes Box Company, Cleveland, Ohio, failed after a comparatively short period of service, company engineers looked around for a more durable stack material. They settled on Byers Wrought Iron. The new stack, welded throughout, 44-inches by 100-feet, was fabricated from ¼-inch wrought iron plate by the Acme Boiler and Welding Company.

Unlined metal stacks face severe corrosive conditions. Carbon dioxide is always present as a combustion product, and some sulfur compounds are generally encountered. When these are dissolved in condensed moisture, a dilute acid is formed which causes severe damage to vulnerable metals. Even when initial conditions are not severe, foresight suggests the use of durable material. For the aggressiveness of attack may be aggravated at any time, by the change of fuel, by the use of economizers or steam-jet draft inducers, or by intermittent operation. These factors can easily cause maintenance headaches unless proper safeguards are used.

Byers Wrought Iron is a veteran in stack service and engineering records provide convincing evidence of its superior durability. Service ratios of two and three to one, as compared to ordinary stack materials, have been reported by many users.

How the unique character of wrought iron is helping others combat flue-gas corrosion is fully explained in our bulletin Wrought Iron for Flue Gas Conductors and Coal Handling Equipment. It may help you . . . so send for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.

WHY WROUGHT IRON LASTS

This notch-fracture test specimen illustrates the unusual fibrous structure of wrought iron—which is responsible for the unusual corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

BYERS

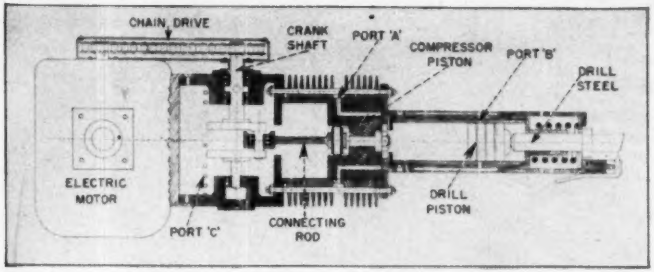
CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

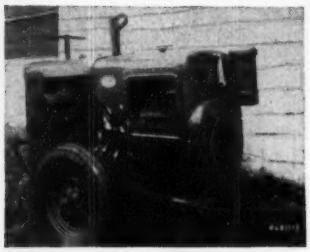
ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

NEW PRODUCTS



Self-contained electropneumatic hammer has a built-in compressor unit

DRILL-HAMMER combines a compressor and drill in one hand-held unit. This results in elimination of a separate compressor, and considerably reduces job-noise. In operation, a 1½-hp electric motor drives the compressor piston through a chain drive (shown above with safety cover removed) building up a pneumatic pressure on the drill piston. No valves are required; air being admitted or exhausted through ports A and B (see illustration). Port C prevents back pressure above the compressor piston. This type of construction permits the compressor piston to idle freely against neutral pressure on either side when the drill piston is not bearing down on the drill shank—as drill piston drops to the bottom of the cylinder, port B opens automatically. Switch for the electric motor is located in the handle and is spring loaded to automatically cut off when operator releases pressure. Weight of the unit is 80 lb.—O. F. SPARANO, 401 BROADWAY, SUITE 2016, NEW YORK 13, N. Y.



Wellpoint pump

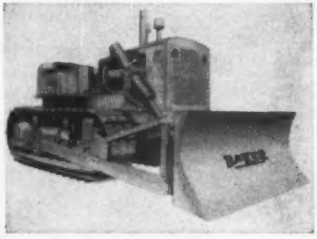
Small in size but big in capacity is the description given a new wellpoint pump. It will fit all sizes and types of wellpoint systems, and has a special outlet that may be used in jetting. Power is furnished by a Wisconsin 4-hp gasoline engine. The unit is mounted on two pneumatic tires for easy portability. — COMPLETE MACHINERY & EQUIPMENT CO., INC., 36-40 ELEVENTH ST., LONG ISLAND CITY, NEW YORK, N. Y.

Acoustical-tile hangers

System for nailing to metal is designed to support gypsum board materials used for suspended acoustical ceiling tile and for furring in masonry-wall construction. Basic parts of the Metl-Lock system are nailing channel and annular nails. The channel utilizes an inverted v-shaped nailing course with the sides at 45 deg. Nailing efficiency is said to be greatly increased as off-center nails are guided from any point within the wide nailing course into the groove where they are strongly anchored. A special channel clip with toggle bolts permits fastening the system to hollow tile. The wide top flange affords an anchor for furring the nailing channel in concrete.—THE MID-WEST ACOUSTICAL & SUPPLY CO., 1192-M W. 69TH ST., CLEVELAND 2, OHIO.

Inclined-conveyor holdback

Roller-type holdback is designed to prevent reversal of inclined conveyors and bucket elevators when power is interrupted. A hardened-steel roller floats between a wedge plate and a drum keyed to the head shaft. When the direction of rotation of the head shaft starts to reverse, due to power failure, the hardened steel roller is immediately wedged between the drum and the plate, stopping motion gently and without shock. When power is reapplied, the holdback releases automatically.—STEPHENS-ADAMSON MFG. CO., AURORA, ILL.



Tractor attachments

Bulldozers, Gradebuilders, and root rippers for the HD-20, HD-15, and HD-9 Allis-Chalmers tractors round out Baker's line of A-C matched equipment. All three attachments are available in hydraulic and cable-controlled models. Fingertip control is achieved through short linkage between blade control lever and hydraulic control valve. Features include direct lift, positive down-pressure, and positive hydraulic hold.—THE BAKER MFG. CO., SPRINGFIELD, ILL.

Cold galvanizing

New method of cold galvanizing uses Zinkrich compound to create an electro-chemical union allowing zinc to galvanize to the base metal's (iron or steel) surface. Zinkrich can be applied by brush, electric spray gun, or cold dip without special equipment. When applied onto adhering rust, it is said to produce a non-flaking coating that arrests further rust and pre-

(Continued on next page)

Now you can lay up to 12" thickness 11' wide; lesser thicknesses to 12½'

JAEGER Paver-Type AGGREGATE SPREADERS
for both base and surface aggregates, free-flowing hot or cold bituminous mixtures, plant-mixed stabilized soil.
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All traction on subgrade
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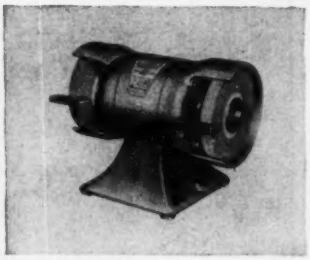
vents rust creep.—CHASE CHEMICAL CORP., 40 W. 29TH ST., NEW YORK 1, N. Y.

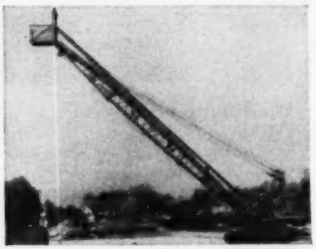


Utility bench grinder

Model A 6-in. grinder features: Dynamically balanced rotors; integrally cast wheel guards; adjustable and tiltable tool rest; and long-wearing abrasive wheels. Power is provided by a ¾-hp 60-cycle 115 or 230-v motor. Weight is 37 lb.—THE LIMA ELECTRIC MOTOR CO., DEPT. AC29, LIMA, OHIO.

Bin and hopper vibrator

Style EM quiet-type vibrator employs heavy pistons and long strokes to produce intense, positive vibration. Breakage of bolts and end plates is said to be practically eliminated. The EM is available in 1⅜ to 4-in. sizes. —CANNON VIBRATOR CO., 1108 POWER AVE., CLEVELAND 14, OHIO.



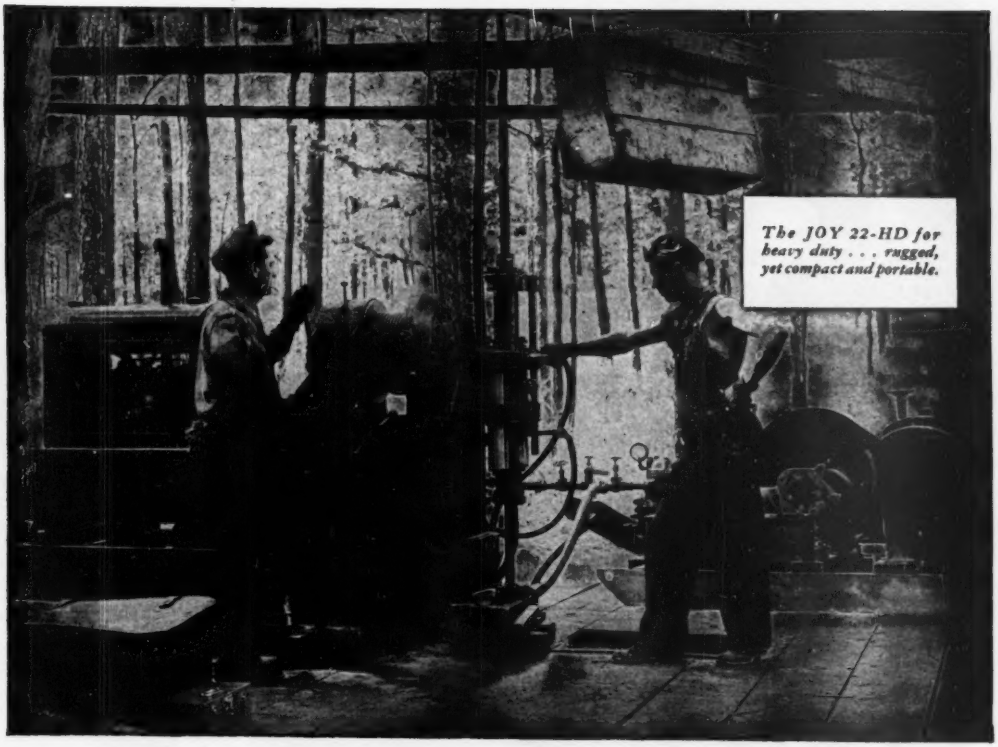
Light-duty crawler crane

Specially built Model 310 crawler-mounted crane-type machine has a 52-ft boom. Platform is attached to the boom end by a pantograph-type mounting that keeps platform level regardless of the angle of the boom. Powered by a General Electric motor, all motions are controlled by air, with Air-Cushion clutches operating the swing mechanism. Boom is raised and lowered by two separate boomhoist units; the second provided for additional safety.—THE GENERAL EXCAVATOR CO., MARION, OHIO.

Welder's scaling hammer

Features claimed for the Church-

(*Continued on page* 105)



The JOY 22-HD for heavy duty . . . rugged, yet compact and portable.

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Maintenance costs got you in a stew?

THEN here's a good suggestion. Follow the example set by thrifty fleet operators the country over. Cut maintenance costs and improve operating efficiency by protecting your equipment with Quaker State HD Oil . . . the best engine lubricant money can buy.

Made from 100% pure Pennsylvania grade crude oil, Quaker State HD Oil is refined with the most modern processing equipment and with technical skill unsurpassed in the industry. It is compounded with chemical detergents of highest quality.

It not only protects against friction and heat under most gruelling conditions—but it helps prevent formation of sludge, gum and varnish, and actually *cleans* as it lubricates.

Use Quaker State HD Oil in your equipment. It will help you cut maintenance costs and increase performance efficiency.

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Use Quaker State HD Oil for trucks, buses, taxis, tractors.
Use Quaker State Motor Oil for passenger cars.

QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.

ward scaling hammer include: Multi-point hammering surface which speeds descaling by loosening scale over a larger surface; hollow-ground head for removing spatter; and slagging pick for accurately pin-pointing removal of slag from weld pockets and corners. The tool can also be used for removing slag from edges of welds.—JACK CHURCHWARD WELDING ACCESSORIES, NORTH HAVEN, CONN.

Shoulder-type fittings

Plastic ells, tees, and couplings are designed for use with the newly developed Carlon TL threadable, rigid plastic pipe. The external shoulders are said to greatly increase the overall strength of the fittings. Molded from a single piece of thermoplastic material and featuring International Pipe Threads, the fittings are guaranteed against rot, rust, and electrolytic corrosion.—CARLON PRODUCTS CORP., 10153 MEECH AVE., CLEVELAND 5, OHIO.

Portable bench grinder

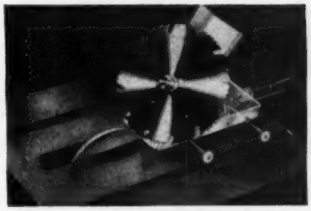
Compact bench grinder is supplied as standard with two 4-in.-dia x ½-in.-face grinding wheels. The Model 400 Hi-Power grinder is powered by a 110/220-v 3,500-rpm motor. It can be supplied as a package unit with adapter and drill chuck, buffing wheels, sanding disks, and polishing bonnet. —PORTABLE ELECTRIC TOOLS, INC., 320 W. 83RD ST., CHICAGO 20, ILL.

Improved D4 tractor

Seat-mounted fuel tanks with increased capacity to 30 gal are now standard equipment on the D4 tractor. The current fender-mounted tanks are still available as optional equipment. Other revisions include: Heavy-duty rigid-type fenders free from obstructions to provide more room for installation of attachments; new operating levers and controls for clutches, gear shift, and brakes; and out-of-sight tool box located under the seat. The tool box is fabricated as part of the fuel-tank assembly. — CATERPILLAR TRACTOR CO., PEORIA 8, ILL.

Logging arch

Heavy-duty Model 80 logging arch is designed for use with D8 tractors. The arch features light weight combined with rugged construction and balanced characteristics. Boom-tip fairlead rolls and lower guide sheave are made of manganese steel. A-frame design and box-type structural members provide maximum stability, maneuverability, and visibility.—HYSTER CO., 2953 N. E. CLACKAMAS, PORTLAND 8, ORE.



Circular saw grinder

Tru-Circle saw sharpener will gum, joint, and sharpen combination crosscut, rip, or novelty blades from 6 to 10 in. in dia. It may also be used for touching up the raker teeth of combination blades. Lever at the foot of the jig raises a dog so that each tooth may be indexed before grinding.—A. D. MCBURNY, 317 E. 4TH ST., LOS ANGELES 13, CALIF.

Heavy-duty induction motor

Wound-rotor induction motors provide variable speed drive, and are recommended for applications requiring high starting torque and low starting current, or long acceleration periods. Drip-proof construction is standard; splash-proof or enclosed models are available. Capacities range from 30 to 150 hp.—ELECTRIC MACHINERY MFG. CO., 821 SECOND AVE., S. E., MINNEAPOLIS 13, MINN.

Masonry waterproofer

Liquid compound is said to effectively waterproof concrete, brick, plaster, stucco, stone, cement, tile, ceramic, and other masonry construction and surfaces. It is also effective on shingles, wood, and other materials. Coverage of Lipton All-Seal wa-

(*Continued on next page*)

Engineering ingenuity enables easier insertion . . . facilitates entire operation . . . eliminates unnecessary endeavor.

A simple whirl of the SPEED NUT . . . BLOCK FALLS OPEN . . . no bolts to unscrew and lose.

Insert the line with the greatest of ease while block is suspended.

Push the plate into place . . . twirl the SPEED NUT and you have it!

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Speed Nut
SNATCH BLOCK

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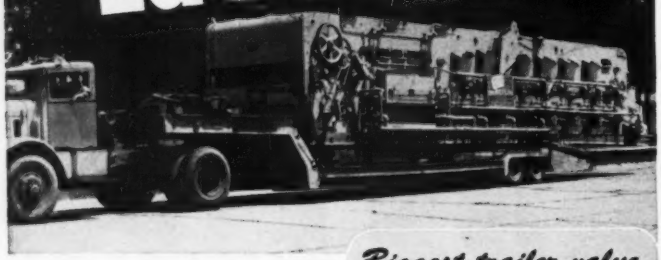
65-ton Bottle Washer moved by LaCROSSE



To minimize danger of costly damage in moving this elaborate 11'x 48' bottle washing plant, a leading Milwaukee hauler wisely selected a 67-ton capacity La Crosse DF-12 trailer, with double oscillating axles. The huge 65-ton washer — capable of cleaning and sterilizing 16,800 bottles per hr. — was safely loaded, transported and installed in just a few days. You, too, can simplify hauling problems with La Crosse heavy-duty trailers — low boys or tilt tops.

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- Stronger *full-length* welded frame . . . no cut flanges!
- Bigger, more powerful S-cam brakes with slack adjusters!
- Tougher, longer-lasting bolt-on type brake linings.
- Extra-wide base rims for longer tire life.
- Stronger axles . . . smoother tighter-fitting decks.

LC-17

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terproofing is 200 to 350 sq ft/gal, and it can be applied by brush or spray. It is transparent and leaves no after stain. — PROGRESSIVE ENTERPRISES, 1001 N. VERMONT AVE., LOS ANGELES 27, CALIF.

Cooling-system filter

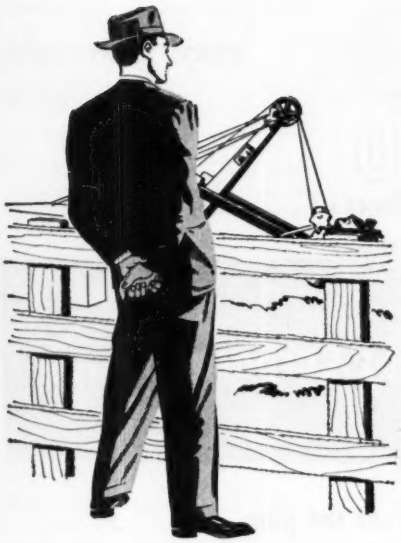
Electro-chemically activated cooling system filter can be used with any liquid-cooled gasoline or diesel engine. The Perry filter is said to assure a clean cooling system and to prevent scale insulation of block, water jackets, and radiator, eliminating a cause of burned valves and scored pistons. Electro-chemical action is further said to keep foreign matter in suspension in the coolant, and to deposit the residue within the filter. Three models are available in capacities from 6 to 30 gal.—SPARK-O-LINER CORP., 601 ELEVENTH AVE., S., MINNEAPOLIS, MINN.

New Product Briefs

Plastic coating for wood surfaces is resistant to chemicals and solvents. Aroflint is a thermosetting phenolic compound produced by: U. S. Industrial Chemicals, Inc., New York 17, N. Y.

Series 71 diesel engines can be equipped with a changeover permitting the burning of either natural gas with a pilot charge of diesel fuel, or diesel fuel alone. Change from dual-fuel to diesel fuel is accomplished by a lever on the gas governor assembly. These engines are made by: Detroit Diesel Engine Div., General Motors Corp., Detroit 28, Mich.

Adjustable stop gage permits rapid power cut-off sawing. The Comet gage can be set to several predetermined lengths by stop blocks having a 4- sq-in. gripping surface. Made by: Consolidated Machinery & Supply Co., Ltd., Los Angeles 21, Calif.



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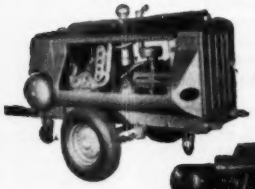
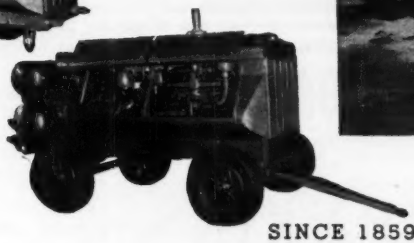
Choose any size Gardner-Denver Portable — from 105 to 500 cubic feet actual capacity—for the best protection against compressed air emergencies.

Bulletins PC-12 and PC-15 give all the facts on diesel and gasoline engine driven models. Write us today!



Model WH-105



Model WH-315

Model WH-500D

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The Quality Leader in Compressors, Pumps and Rock Drills

Gardner-Denver Company, Quincy, Illinois

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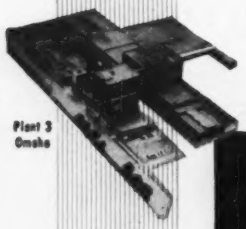
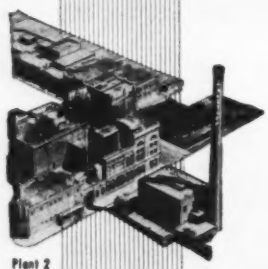
Gardner-Denver Company (Canada), Ltd., Toronto, Ontario

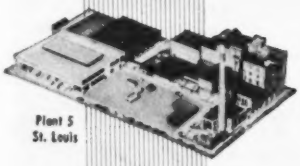


Plant 3
Omaha

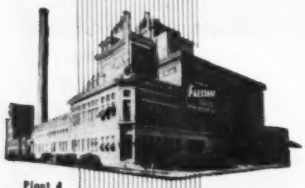
Plant 1
St. Louis



Plant 2
St. Louis



Plant 5
St. Louis



Plant 4
New Orleans

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Manufacturers' Publications

Tamping rollers—Medium and giant-weight tamping rollers are described in a new folder. The medium-weight "M" series are sheepfoot types, single, double, or triple-drum combinations, for standard requirements. Foot pressures range from 108 to 315 psi. Foot surface areas of 5 or 7½ sq in. are available. The giant-weight "G" series have diamond-shaped feet, in single and double-drum types. Foot pressures range from 296 to 740 psi. Foot lengths of 8 or 9½ in. can be obtained. —Wm. Bros Boiler & Mfg. Co., 1057 Tenth Ave., S. E., Minneapolis 14, Minn.

Glass-fiber ducting—Catalog (16 pp) describes a line of flexible and rigid rubber-impregnated glass-fiber ducting, hose, sleeves, and couplings. Seven pages of engineering data cover weight, working temperature ranges, design working pressures, and leakage factors. Charts and graphs list comparative characteristics of more than 130 types and constructions, and provide a graphic means of selecting the most suitable type, based on temperature and pressure requirements. —Arrowhead Rubber Co., Downey, Calif.

Induction motors—Construction features of large 2-pole squirrel-cage induction motors are listed in Bulletin 05B7550. These motors are built for boiler feed pumps, oil pipeline pumps, centrifugal blowers, descaling pumps, and other high-speed drives. Cross-section views show construction of stator winding, bearings, ventilation, squirrel cage winding, rotor, stator, and bearing brackets. —Allis-Chalmers Mfg. Co., 1018 S. 70th St., Milwaukee, Wis.

Transmission belting—Technical bulletin contains data on flat transmission belting. It is designed as an aid to plant engineers and operating personnel in selecting the proper belt to meet individual problems. Bulletin 3678 contains complete formulas, charts, and tables.—Thermoid Co., Trenton, N. J.

Drainage installation—Illustrated 46-p manual covers installation of Armco drainage products. It is intended to assist construction engineers, superintendents, and foremen in the proper methods of installing drainage structures, culverts, sewers, or conduits.

(Continued on page 111)

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***New Apartment Project Near East River*—** This recently completed apartment project, located at 20th Ave. and 21st St., Astoria, New York City, is known as the Marine Terrace Apartments, and is but a stone's throw from New York City's busy East River. The Marine Terrace Apartments consist of 26 three-story, oil-heated buildings. These wing-type structures have facilities for 1338 families. The development is situated on 40 acres of ground, more than half of which are devoted to streets, playgrounds, and landscaped areas. Steelwork for the project consists of some 1750 tons of Bethlehem Structural Shapes. *Contractor:* River Heights Construction Corp., New York. *Architect:* Samuel Paul & Associates, Jamaica, N.Y. *Steel Fabricator and Erector:* Dreier Structural Steel Co., Inc., Long Island City, N.Y.

BETHLEHEM STEEL

The manual discusses: Proper handling of drainage products; location; proper excavation; and preparation of base in various types of foundation soils and rock. Also listed are recommendations for proper backfilling.—ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Sheepsfoot tamping rollers—Booklet 892 describes sheepsfoot tamping rollers, with special emphasis on the Baker-designed feet, shaped to compact soil without disturbing it on pull-out. Single, double, and triple-drum models with tandem hitches are described in detail. Features listed include: Draw-bar design, universal clevis, forged tampers, replaceable toes, shear-type cleaners, and dirt and grease-sealed self-aligning roller bearings.—THE BAKER MFG. CO., SPRINGFIELD, ILL.

Color-name dictionary—Sixty-four-page supplement to a color-harmony manual is a color name dictionary. The dictionary contains 775 names arranged so that the user can work from names to colors, or conversely, from colors to names. To match any color, select color chips from the manual and then find the names in the dictionary which correspond to the notations on the chips. — CONTAINER CORP. OF AMERICA, 38 S. DEARBORN ST., CHICAGO 3, ILL.

Microfilming service—Illustrated booklet (12 pp) presents pertinent information on microfilming engineering drawings. This factual publication covers all phases of microfilming including costs, equipment used, storage of film, processing of film, and other related subjects.—MICRO-PHOTO SERVICE BUREAU, 4614 PROSPECT AVE., CLEVELAND 3, OHIO.

Drilling equipment—Diamond and shot core drills, soil-sampling tools, and other equipment for subsurface exploration are listed in 4-p Bulletin 33. Various models are illustrated, accompanied by brief descriptions of their principal features. Capacities and recommended applications are also listed.—ACKER DRILL CO., INC., SCRANTON 3, PA.

Liquid wetting agent—Procedures for using liquid wetting agents in the manufacture of concrete blocks are listed in a bulletin describing Monsanto's Santomerse S. Advantages listed in the catalog include: Denser, stronger, and more uniform concrete products; improved plasticity; lighter color; cleaner equipment; and better dispersion of cement. — MONSANTO CHEMICAL CO., ST. LOUIS 4, MO.

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This is how we build the bridge

The big meeting hall of the Seamen's Exchange in downtown Manhattan was crowded. A couple of hundred people were there to hear more about the New York Thruway Authority's proposal to build a 15,000-ft bridge-causeway across the Hudson River at its widest part (ENR, Dec. 14, p. 25).

On the platform, flanked by civilian aides, some remarkably intricate ship models, and the rather incongruous remains of a recent Christmas celebration (a papier-maché fireplace, falsely-grinning Santa, evergreen limbs, tattered red tissue paper) sat Col. E. P. Ketcham, the Army's district engineer. Red of face, the colonel was rather apologetically nursing a cold that made him speak in a hoarse croak; rather wistfully attempting to keep the discussion on the subject of navigation—not personalities.

In the front row sat handsome, silver-thatched Bertram Tallamy, the state's director of public works and head of the Thruway Authority. He was flanked by a dignified array of engineers, economists and public figures: Robert Moses, New York's multiple-titled man-of-all-work on public improvements; Emil Praeger, designer of the foundations for the new bridge; Architect Aymar Embury 2d; and a bevy of economists, towboat-company tycoons (mostly for sand-and-gravel concerns).

Behind them, in much less orderly array, sat the opponents—local chamber of commerce and civil association officials, private citizens who owned boats, barge captains, homeowners, oil and fuel towboatmen.

• **Only a round**—To most of the participants—despite Col. Ketcham's declaration that the Corps of Engineers cared only for discussion of navigational feasibility of the structure—this was another round in a long and bitter battle.

The battle was drawn on fairly clear lines—and most of them were personal. Some 200 people in the west-shore towns of Nyack, South Nyack, Nanuet and Grand View—and the east-shore town of Tarrytown—would be displaced by the bridge connections. Additionally, South Nyack feels it will be in effect amputated from Nyack proper by the interposition of the bridge approaches. Many a taxpayer on both sides of the river felt that the Thruway Authority had picked an unfortunate spot for its bridge—the "Tappan Zee" a stretch where the Hudson is more than three miles wide at some points.

Earlier rounds had been fought out at previous hearings.

• **Opening gun**—At Col. Ketcham's request, Tallamy opened the proceedings, with a brief, concise statement of the authority's proposal, reasons for selection of the site (3% grades possible on both sides of the river, seven degree curvatures, best service to most people). He flashed maps and charts, then called on Praeger, who read a cold engineering report as to soundness of design, affirmed that the 1,000-ft tied arch over the river channel would create no navigational difficulty.

With the air of a man long accustomed to such things, Moses stood up, hand in pockets of his rumpled gray sack suit, opined that the bridge was necessary and right, commented that its location would incommode "remarkably few" people, that the location also would provide most revenue (the bridge will be a toll structure).

A long parade of other witnesses followed: Heads of sand and gravel concerns whose barges ply the Hudson River; local residents. Probably the shortest testimony was that of a Hudson River Day Line captain who said:

"The bridge won't be any bother to me," and sat down.

The testimony droned on with great politeness all around. Col. Ketcham, his eagles glinting dully, confined himself to drinking water.

Windup, for the "pro" side woke everyone. Rotund, short, twinkly Fred Horn, a Nanuet realtor and former state legislator who introduced original authority legislation, made an impassioned half-hour speech. Somewhat to the Army's consternation, the U. S. flag was waved vigorously, Home and Mother were prominent, and civic glorification triumphed over all.

He finished to a round of mixed applause, catcalls and boos.

• **No lunch**—Hopefully, Col. Ketcham arose, suggested a recess for lunch. This got nowhere. Opponents wanted their say at once, while the iron was smoking hot.

Col. Ketcham retired to his water pitcher, after sternly warning that the discussion must be confined to navigation—but promising that he would grant time for a rebuttal to Mr. Horn, if desired. No one took up that offer.

And so began another parade of witnesses—some violently impassioned, some coldly factual.

Towboat captains testified that the new bridge would dangerously cut the channel width, make it impossible to bring long tows through and into Tarrytown harbor under certain conditions. Small-boat owners thought the 5,600-ft causeway on the western side would cause additional shoaling.

Several women appeared—one of whom commented that the destruction of 147 houses in South Nyack would displace the rather startling total of 1,500 persons. The Rockland County Light and Power Co. weighed in with the comment that such a bridge might block its new Nyack steam plant from receiving coal and fuel oil in wintertime (because of ice jams); an ex Air Force colonel called attention to the ease with which the bridge could be destroyed by air attack; several people commented on the use of steel (the $50,000,000 structure would have deck-truss approach spans). One speaker called attention to the fact that only sand and gravel executives had favored the bridge—oil and coal towboat men were in the opposition.

Another speaker, for the Liberal Party, (who explained he had no engineering background) even saw in the structure a Communist plot—to force the U. S. into using much-needed materials for bridges, rather than for war.

Several others—who said they couldn't confine themselves only to navigation, simply submitted their prepared statements.

Mr. Tallamy rebutted briefly—repeating that the authority would do any necessary dredging to keep local channels open, that the authority believed no other navigational hazard would be presented.

Col. Ketcham took another drink of water, looked around, asked for any more comment on navigation. No one offered.

Bang! went the Colonel's gavel. "This hearing is closed," he declared.

He took a final drink of water, remarked to the press that a decision might be made in eight weeks.

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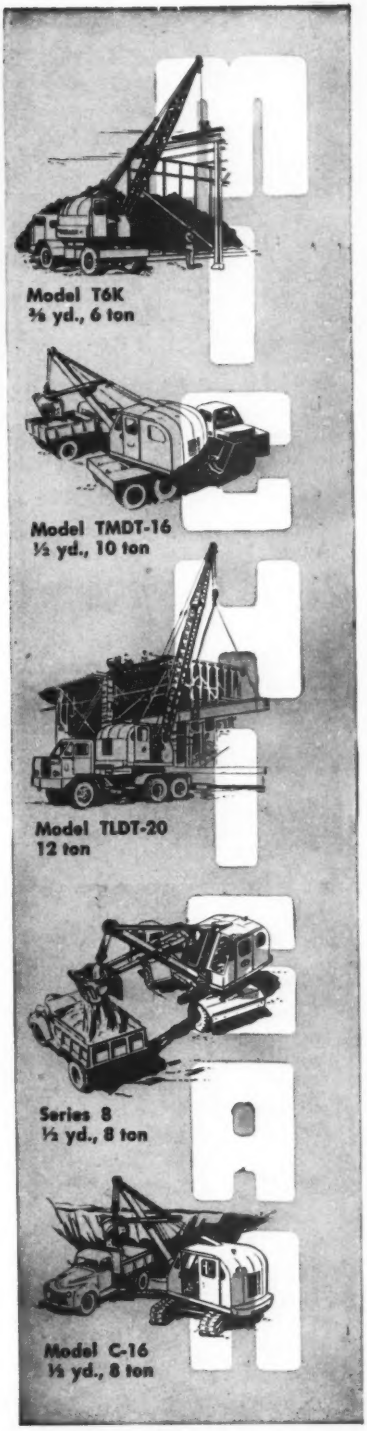

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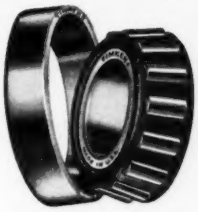

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